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**HEALTH-PROMOTING LIFESTYLE, PERCEIVED HEALTH COMPETENCE,  
BARRIERS TO HEALTH PROMOTION, AND ASTHMA-RELATED KNOWLEDGE  
IN PERSONS WITH CHRONIC ASTHMA**

A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Science  
at Virginia Commonwealth University

By

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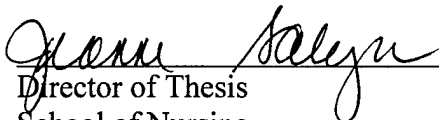
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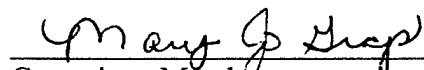
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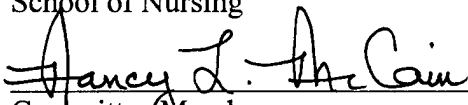
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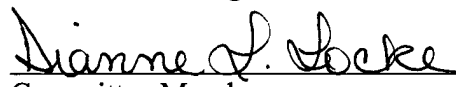
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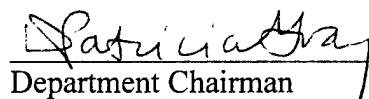
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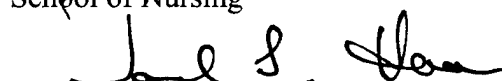
  
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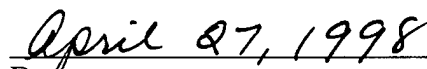
  
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## ABSTRACT

**TITLE: HEALTH-PROMOTING LIFESTYLE, PERCEIVED HEALTH COMPETENCE, BARRIERS TO HEALTH PROMOTION, AND ASTHMA-RELATED KNOWLEDGE IN PERSONS WITH CHRONIC ASTHMA**

Laura A. Bass, R.N.C., B.S.

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University

Virginia Commonwealth University, 1998

Major Director: Dr. Jeanne Salyer, Assistant Professor, Department of Adult Health

The purpose of this descriptive study was: (1) to describe the health-promoting behaviors, the barriers to health promotion, knowledge of asthma, and perceived health competence (self-efficacy) of persons with chronic asthma, and (2) to examine the relationships among knowledge of asthma, health-promoting lifestyle, barriers to health promotion, perceived health competence (self-efficacy), and health promoting behaviors and among gender, race, and asthma management site. A convenience sample of 68 patients who were seen at the Medical College of Virginia Hospitals at the Virginia Commonwealth University in either an advanced practice nurse-managed Asthma Clinic, Primary Care Clinic, or Emergency Department participated in this study. Participants completed the following five questionnaires: demographic data, Health-Promoting

Lifestyle Profile II (HPLP), Perceived Health Competence Scale, Barriers Scale, and the Asthma “IQ” test. Descriptive statistics, t-tests, Pearson’s correlational, and one-way analyses of variance (ANOVA) were used for data analysis.

The health-promoting lifestyle of asthma patients in this study was characterized by spiritual growth, interpersonal relations, and health responsibility. In this study, asthma patients tended to have greater feelings of perceived health competence. The barriers to health promotion cited most often were lack of money, too tired, bad weather, and concerns about safety. Although a number of trends were noted in this study, results do not support significant differences in health promotional behaviors, perceived health competence, barriers to health promotion, and asthma-related knowledge between males and females or site of asthma management. The only significant difference ( $p < .05$ ) existed between Caucasians and non-Caucasians in the health-promoting behaviors reflecting spiritual growth. Weak correlations existed among the variables of perceived health competence, barriers to health promotion, asthma-related knowledge, and age. This study partially supports Pender’s Health Promotion Model (Pender, 1996). There were significant relationships between the modifying factors of age and education on health-promotional behaviors, perceived health competence, barriers to health promotion, and asthma-related knowledge. Since the modifying factors are not amendable to change, focus must be placed on changing the cognitive-perceptual factors, such as increasing one’s perception of self-efficacy and decreasing the number of perceived barriers to health promotion.

## CHAPTER ONE

### THE PROBLEM

#### Introduction

Asthma is a chronic reversible, inflammatory condition that affects almost 15 million people in the United States and more than 100 million worldwide (Jain, 1996; National Asthma Education and Prevention Program, 1997). The latest estimates from the United States Centers for Disease Control and Prevention indicate that from 1982 to 1992, the incidence of self-reported asthma increased by 42% (Jain, 1996). More than 100 million days of restricted activity and 470,000 hospitalizations, with the highest rate among blacks and children, are reported annually by individuals with asthma (National Asthma Education and Prevention Program, 1997), and those who are hospitalized are sicker and need endotracheal intubation more often (Jain, 1996). In addition, it has been reported that each year more than 5000 people die of asthma (National Asthma Education and Prevention Program, 1997), with the highest rate among blacks aged 15 to 24 (Centers for Disease Control and Prevention, 1996). The increased mortality rate has especially affected poor and minority ethnic groups. One explanation given for the increased mortality rate in these marginalized groups is the failure of patients and health care providers to recognize the severity of asthma, which can ultimately lead to a delay in

treatment (Jain, 1996). Another reason is that patients often lack the knowledge or have limited education to understand the proper treatment plan and are, therefore, often non-compliant (Ali & Bennett, 1992; Blixen, Tilley, Havstad, & Zoratti, 1997; Cochrane, 1996; Dai & Catanzaro, 1987; Devine, 1996; Fleetwood & Packa, 1991; Melnyk, 1988; Stuifbergen, Becker, & Sands, 1990). Other reasons for non-compliance are varied. For some it may be related to economic status (Blixen et al., 1997; Booth, Bauman, Owen, & Gore, 1997; Duffy, 1989; Melnyk, 1988; Northam, 1996; Stuifbergen et al., 1990). For others it may be due to lack of access to convenient health care facilities (Jones & Nies, 1996; Melnyk, 1988; Pinto, Marcus, & Clark, 1996; Stuifbergen et al., 1990), lack of time for both patients and providers (Alto, 1995; Booth et al., 1997; Jones & Nies, 1996; Melnyk, 1988; Pinto et al., 1996), transportation problems (Melnyk, 1988; Northam, 1996), lack of interest or motivation (Jones & Nies, 1996; Melnyk, 1988; Pinto et al., 1996), fear (Champion, 1988), and the feeling that, no matter what happens, nothing is helpful.

The cost of care for the patient with asthma has increased dramatically. Researchers estimated that in 1990, direct medical costs, such as expenditures for medications and inpatient and outpatient hospitalizations, totaled \$3.6 billion, with an additional \$2.6 billion expense incurred as a result of time lost from work (Goldstein, 1994; Jain, 1996; Suissa, 1997). Due to the rising health care costs over the years and the observed benefits of preventive treatments, the value of health promotion and wellness has been recognized (Volden et al., 1990). There is strong evidence that individuals can

do much to enhance and maintain their well being. By engaging in a health-promoting lifestyle, individuals can prevent or slow down the early onset of disabling health problems (Pender, 1996; Speake, Cowart, & Pellet, 1989). While there have been a number of studies on health promotion, there is limited research on health-promotion behaviors among those with chronic illness (Nelson, 1991; Neuberger, Kasal, Smith, Hassanein, & DeViney, 1994; O'Brien, 1993; Stuifbergen & Becker, 1994) and none with patients who have asthma.

### Framework

The theoretical framework for this study was based on Pender's Health Promotion Model (Pender, 1996) in which health-promoting behavior is an expression of the human actualizing tendency toward maintaining or increasing one's level of well-being, self-actualization, and personal fulfillment. This model, which does not rely on fear or threat as a source of health motivation, but rather on a positive approach to living that leads individuals toward realizing their highest potential for well-being, can be applied across the life span (Pender, 1996; Walker, Sechrist, & Pender, 1987).

Pender (1996) integrated constructs from expectancy-value theory and social learning theory in the development of the Health Promotion Model. Expectancy-value theory (Bandura, 1982) assumes that behavior is both rational and economical and that individuals will invest their efforts in actions that are perceived as possible to achieve. In other words, individuals will engage in an action and will continue with this action if the outcome has a positive personal value and, if based on the knowledge they have, this

action will bring about the desired outcome (Bandura, 1982).

Expectancy theory, which was developed by Bandura (1982) from the social learning framework, places emphasis on self-direction, self-regulation, and perceptions of self-efficacy. Self-efficacy (Bandura, 1982; Bowsher & Keep, 1995; Moore, 1990) is the belief one has in his or her ability to perform behaviors needed to generate a specific outcome. The concept of self-efficacy affects one's adaptation to chronic illness. Increasing self-efficacy is an essential component of most behavioral objectives in patient teaching. Self-efficacious thoughts may facilitate positive coping efforts and must be present before health-protective or promotion measures are instituted (Moore, 1990). According to this theory, individuals will act if they observe certain behaviors producing desirable results (outcome expectations) and are reasonably sure they can successfully engage in the behavior (self-expectations) (Bandura, 1982).

According to the Health Promotion Model (Figure 1), the determinants of health-promoting behavior are categorized into cognitive-perceptual factors, modifying factors, and variables affecting the likelihood of action. The Health Promotion Model theorizes that modifying factors and individuals' perceptions (cognitive-perceptual) of themselves and their health play a significant role in determining lifestyle activities (Pender, 1996). The cognitive-perceptual and modifying factors guide the decision-making process. Cognitive-perceptual factors, which are the primary motivational mechanisms for acquiring and maintaining health-promoting behaviors include the importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health

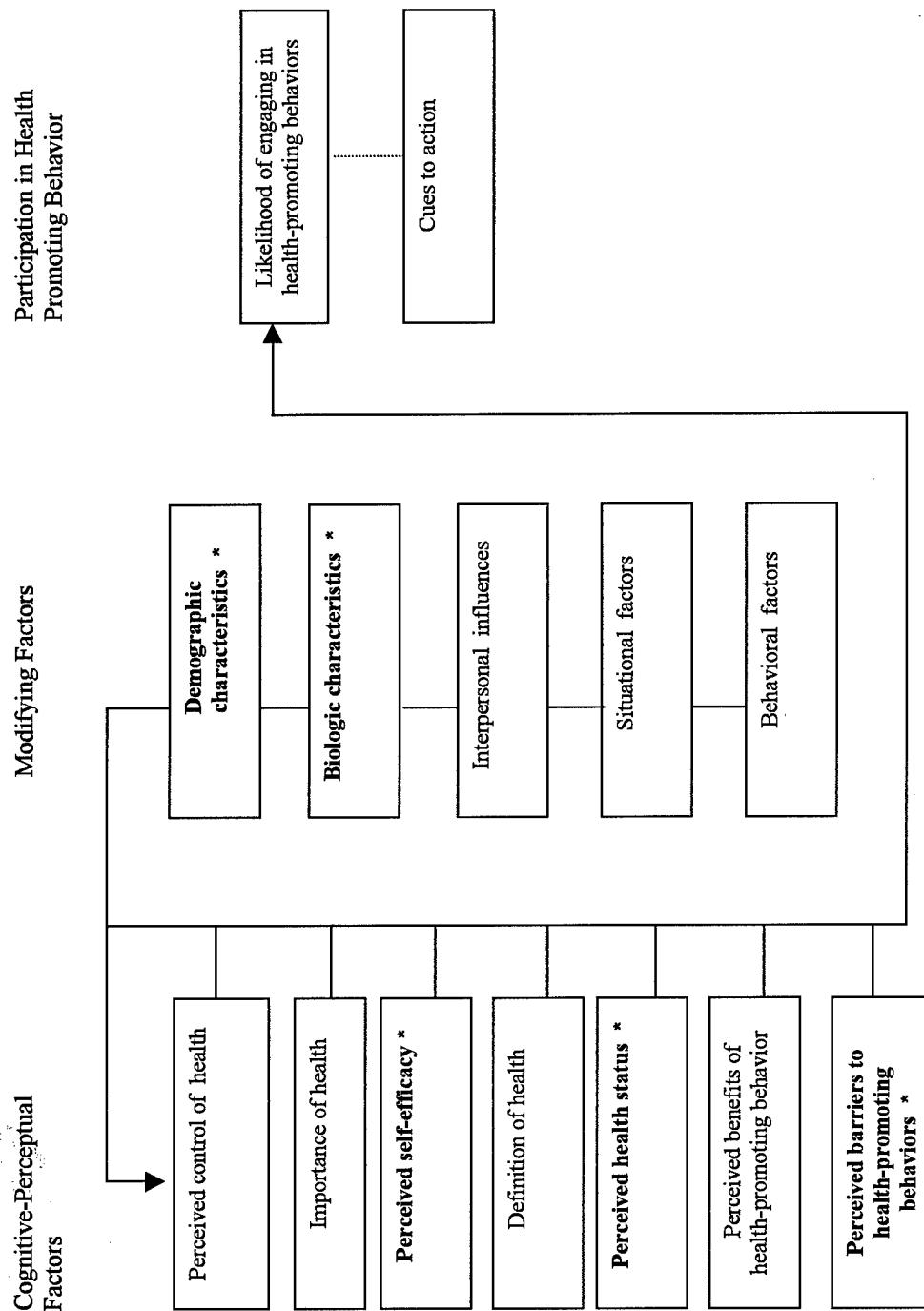


Figure 1. Health Promotion Model. From Pender, N. J. (1996). Health promotion in nursing practice (3<sup>rd</sup> ed.). Stamford, CT: Appleton & Lange.

\* Factors examined in this study

status, perceived benefits of health-promoting behaviors, and perceived barriers to health-promoting behaviors. Modifying factors, which in turn affect the cognitive-perceptual factors, influence health-promoting behaviors. These modifying factors include demographic characteristics, biological characteristics, interpersonal influences, situational factors, and behavioral factors. The taking-action phase includes cues which help motivate one to engage in health-promoting behaviors. The likelihood of engaging in health-promoting behaviors is affected by cues to action. If one feels good, one is more apt to continue to participate in positive behaviors (Pender, 1996).

How individuals perceive their health status may influence the type of health-promoting activities they choose. As perception of good health increases, individuals are more likely to act in ways to achieve and maintain a healthy lifestyle. Strong predictors for health-promoting behaviors are perceptions of health-status and self-efficacy (Fleetwood & Packa, 1991; Pender & Pender, 1986; Pender, Walker, Sechrist, & Frank-Stromborg, 1990; Riffle, Yoho, & Sams, 1990; Stuijbergen, Becker, & Sands, 1990; Weitzel, 1989). In a study of 100 patients with arthritis, Neuberger et al. (1994) found results similar to those reported in the Pender et al. (1990) study, in that the poorer the perceived health status, the lower the exercise subscore on the Health-Promoting Lifestyle Profile. Duffy (1990), Riffle et al. (1990), and Speake et al. (1991) also noted that the greater the perception of present health, the higher the scores on the subscales of self-actualization, nutrition, interpersonal support, and exercise.

One of the most frequently identified cognitive factors that is responsive to



change and that impels individuals to adhere to behavioral modifications in lifestyle is the individual's perception of personal capabilities or self-efficacy (McAuley, Courneya, Rudolph, & Lox, 1994). Self-efficacy expectations are the "individual's beliefs in his/her capabilities to execute necessary courses of action to satisfy situational demands and are theorized to influence the activities that individuals choose to approach, the effort expended on such activities, and the degree of persistence demonstrated in the face of failure or aversive stimuli" (McAuley et al., 1994, p. 498). Self-efficacy is concerned with the judgments one makes based on the skills one possesses.

By the year 2000 it is predicted that 13% (34.9 million) of the population will be 65 and older. By the year 2030, these numbers will rise to 22% (65.6 million) (Nicholas, 1993). As these percentages increase, the number of individuals living with chronic illnesses, including asthma also will rise. With 15 million Americans diagnosed with asthma (National Asthma Education and Prevention Program, 1997), there are a significant number of young adults dealing with this disease on a daily basis, and while the incidence may not change, a difference can be made in how an individual deals with and adapts to a chronic illness. It is imperative that nurses attempt to make an impact at an early age, because the purest form of motivation for health promotion exists in childhood through young adulthood when energy, vitality, and vigor are important to peer acceptance and self-esteem yet the threat of chronic illness seems remote (Pender, 1996). By maintaining healthier lifestyles at an earlier age, the impact that chronic illness has on the entire lifespan can be recognized by improved health and

quality of life as one ages. And by promoting healthier lifestyle and behaviors, not only should the occurrence of asthma exacerbations decrease, but, as a result of reducing hospitalization, so should cost.

Unlike cognitive-perceptual factors, demographic characteristics are not amenable to change. However one's attitudes and behaviors, such as perceived self-efficacy, may be different and can be used to tailor programs for patients. In research related to exercise, increased self-efficacy is associated with the ability to continue a routine exercise program or lifestyle change in the diseased and asymptomatic population (McAuley et al., 1994). If interventions or actions are effective in producing a change, there are higher perceptions of efficacy. Health-related changes will likely occur if two things happen. First, change will take place when the patient senses that the threat to both health and personal vulnerability is high. Second, when the conditions of self-efficacy and response efficacy (effectiveness in overcoming the threat) prevail, then change will occur (McAuley et al., 1994). Hence, efficacy awareness in the continuance of health behaviors is influential in those situations wherein lie the greatest challenges.

It is believed that if efficacy expectations are altered, the frequency of one's engagement in health-promoting activities may also change (Stuifbergen & Becker, 1994). Thus, adopting healthy behaviors may promote higher levels of health and prevent or delay onset of chronic illness, thereby extending longevity and improving quality of life (Pender & Pender, 1986; Speake et al., 1991).

This study was designed to examine the health-promotional behaviors practiced

most often by patients with asthma and the relationships among specific components of the Health Promotion Model. The cognitive factors of perceived health competence, barriers to health promotion, asthma-related knowledge, and the modifying factors of age, gender, education, and race were assessed as to their relationship with health-promoting behaviors.

### Purpose of the Study

Health promotion is defined as activities developed to enhance or maintain an individual's well-being (Pender, 1996). One way of affecting change is not only to provide education regarding one's disease state, but also to provide the knowledge and encouragement to maintain a healthy lifestyle. Providers need to be actively involved in health promotion and wellness, not only during times of crisis, but more importantly, when patients are well and can effect a change in their behavior. Revising, adapting, and maintaining one's health-promotional behaviors is a key to improving the overall health of those with chronic illness.

Knowledge of the relationship between lifestyle and health status, the increasing understanding that health care has limitations, and the enormous cost of treating an acute exacerbation (Fleetwood & Packa, 1991) are important concepts in the treatment of any patient with a chronic disease. Health promotion and education are key components in the care of a patient with asthma. The administration of the proper medications, adherence to treatment plan, and maintenance of healthy behaviors may reduce the incidence of an asthmatic attack. However, not all individuals with asthma adhere to the

instructed plan of care. Therefore, the purpose of this descriptive study was two-fold:

(1) to describe the health-promoting behaviors, the barriers to health promotion, knowledge of asthma, and perceived health competence (self-efficacy) of persons with chronic asthma, and (2) to examine the relationships among knowledge of asthma, health-promoting lifestyle, barriers to health promotion, perceived health competence (self-efficacy), and health promoting behaviors and among gender, race, and site of asthma management. The specific research questions this study was designed to answer were:

1. What health-promotional behaviors do asthma patients practice most often?
2. What is the perceived health competence of asthma patients?
3. What is the disease-related knowledge of asthma patients?
4. What perceived barriers to health-promotional behaviors are most often identified by asthma patients?
5. What relationships exist between health-promotional behaviors, perceived health competence, barriers to health promotion, and asthma-related knowledge?
6. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between males and females and between Caucasian and non-Caucasian patients with asthma?
7. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist among patients with mild intermittent, and mild, moderate, and severe persistent asthma?

8. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between asthma patients requiring inhaled steroids and those who do not require inhaled steroids?

9. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between patients receiving asthma care in the Asthma Management Program and those receiving care in the Primary Care Clinic or Emergency Department?

#### Definition of Terms

For the purpose of this study the following terms were defined:

1. Patients with Asthma are persons who have been diagnosed with asthma and are under the care of a health care provider.

2. Health Promotion is the motivation or desire one has to increase one's well being and movement toward a healthy state (Pender, 1996).

3. Lifestyle involves "discretionary activities with significant impact on health status that are a regular part of one's daily pattern of living" (Pender, 1996, p. 134).

4. Health Competence is the degree to which an individual feels capable of effectively controlling his or her health outcomes (Smith, 1995).

5. Barriers involve the "belief about how often various factors interfere with one's ability to take care of one's health" (Stuifbergen & Becker, 1994, p. 6).

6. Asthma-related Knowledge is education provided to patients at the time of diagnosis and integrated into every step of the clinical asthma management plan, thereby allowing patients to work in a collaborative approach with their provider to appropriately manage their asthma (National Asthma Education and Prevention Program, 1997).

7. Health-Promotion Lifestyle Profile II is an instrument designed to measure the health-promoting lifestyle. The behaviors this instrument intends to measure are: health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management.

8. Perceived Health Competence Scale is an instrument designed to provide a measure of perceived health competence.

9. Barriers Scale is an instrument designed to identify the most frequently encountered barriers to health promotion.

10. Asthma-related Knowledge Scale is an instrument designed to test the knowledge of the disease process of asthma.

## CHAPTER TWO

### LITERATURE REVIEW

#### Health-Promoting Lifestyle

It is generally accepted that the way to achieve optimal health and prevent disease is to maintain a healthy lifestyle. Pender (1996) states that “health promotion is motivated by the desire to increase well-being and actualize human health potential,” whereas health protection “is motivated by a desire to actively avoid illness, detect it early, or maintain functioning within the constraints of illness” (p. 7).

Over the years there have been a number of studies of specific groups. Kemp and Hatmaker (1992) and Walker (1989a, 1989b) have studied the effects perceived anxiety in low-income, low- and high-risk pregnancies, and stress in mothers with infants have on promoting a healthy lifestyle. Those in the low-risk pregnancy category demonstrated better health-promoting behaviors in self-actualization ( $t[62] = -2.43$ ;  $p = .016$ ) and health responsibility ( $t[62] = -2.46$ ;  $p = .017$ ) than those in the high-risk group (Kemp & Hatmaker, 1992). Reasons cited for the differences in subscales are that those in the high-risk pregnancy group may have poorer perceptions of their abilities to meet personal goals, focus is placed more on the welfare of the fetus, and they may not be as happy or content with their pregnancies as those in the low-risk group. Although how stress

affects mothers' health behaviors and lifestyles was not delineated, Walker (1989a, 1989b) believes that a healthy lifestyle does affect an individual's perception of stress and that all the behaviors depicted in all the subscales of the Health Promotion Lifestyle Profile (HPLP) are effective in reducing stress.

### Health Promotion and Age

The healthy lifestyle and behaviors of the elderly have been studied by a number of researchers (Ali & Bennett, 1992; Duffy, 1993; Kuster & Fong, 1993; Riffle et al., 1989; Speake et al., 1989; Volden et al., 1990; Weitzel, 1989). Age has been shown to be a positive factor in determining one's willingness to maintain healthy behaviors, thereby influencing one's health over the lifespan. As individuals age, they are more likely to practice health-promoting behaviors. In testing the psychometric properties of the Spanish version of the HPLP ( $N = 106$ ), Kuster and Fong (1993) found that age was the demographic variable most frequently related to health-promoting lifestyle. Older individuals tended to practice better health promoting behaviors, including stress management ( $r = .21$ ), nutrition ( $r = .36$ ), health responsibility ( $r = .31$ ), and self-actualization ( $r = .21$ ). Weitzel (1989) noted that age had a positive effect on nutrition and health responsibility and a negative effect in relation to exercise. Weitzel and Waller (1990) determined age was also a significant factor with Caucasian, Hispanic, and African-American blue-collar workers. Age was positively associated with nutrition and health responsibility in the Caucasian group and positively associated with stress management in the African-American group. In the Hispanic group there was a positive



association with exercise. In another study of 638 Caucasian and African-American blue-collar, skilled trade, and white-collar workers, Lusk, Kerr, and Ronis (1995) found that older workers had significantly higher scores on nutrition ( $F=15.30, 3.03; p=.001$ ) and health responsibility, while younger workers had significantly higher scores on interpersonal support, self-actualization, and exercise ( $F=3.05, 7.45; p=.05$  to  $.001$ ). After post hoc Scheffé tests were completed, it was noted that scores of the blue-collar workers were significantly lower in respect to health-promoting lifestyle and nutrition. White-collar workers scored significantly higher than the skilled trade and blue-collar workers on interpersonal support, self-actualization, and exercise.

In a study of 478 adults ( $N=291$  males, 187 females) from a rural-urban area, Volden, Langemo, Adamson, and Oechsle (1990) reported a steady decline in exercise among age groups until the age group of 55 to 64 years. Although there was a renewal of increased positive behaviors related to exercise in the 55-64 year-old group, it did not continue in the 65-74 year-old group. Additionally, Volden et al. (1990) found that as age increased, so did the assumption of health responsibility and initiation of healthy nutritional practices. Walker et al. (1988) reported that younger groups scored lower than older adults and non-Hispanics in total health-promoting lifestyle, health responsibility, and stress management. Kuster and Fong (1993) noted that older adults reported more health promoting, stress management, self-actualizing, health responsibilities, and healthy nutritional behaviors.

Riffle et al. (1990) noted in a sample of 155 Appalachian elderly individuals,

being older was associated with a higher self-actualization subscale but also a lower nutritional score. Younger and better educated individuals tend to engage in better health-promoting behaviors. Older participants' participation in health-promotion activities may be influenced by a number of factors. They may lack the income, social support, or the knowledge required to maintain a healthy lifestyle (Duffy, 1993; Rifle et al., 1990; Speake et al., 1989). Although the findings in these studies suggest that age have both positive and negative affects on health-promotional activities, age is a variable that should be considered in any treatment plan. As individuals age, they do not become incapable of making behavioral changes. However, the earlier these changes occur, the more likely they are to become part of one's lifestyle.

#### Health Promotion and Ethnicity

In a study of predictive factors for health-promotive behaviors in different ethnic groups and job occupations, Weitzel et al. (1990) found that compared to Hispanics and African-Americans, Caucasians tended to report a greater frequency in performance of behaviors promoting self-actualization ( $\underline{M}$ =41.06,  $\underline{SD}$ =7.44) and nutrition ( $\underline{M}$ =16.02,  $\underline{SD}$ =4.24). Similarly Speak et al. (1989) found that scores on self-actualization, nutrition, and health responsibilities for elderly participants where higher for the Caucasian participants than for Hispanics and African-Americans. Since the Hispanic population typically has strong family and community ties, those who are concerned for others tend to hold a lower degree of concern for themselves and thus practice fewer behaviors directed toward self-development (Weitzel et al., 1990).

From a study of blue-collar workers, Weitzel (1989) noted that the behaviors of self-actualization ( $\underline{M}=39.9$ ,  $\underline{SD}=7.9$ ) and interpersonal support ( $\underline{M}=20.9$ ,  $\underline{SD}=3.7$ ) were reported more frequently by blue-collar workers, while exercise ( $\underline{M}=9.7$ ,  $\underline{SD}=3.3$ ) and health responsibility ( $\underline{M}=20.4$ ,  $\underline{SD}=5.8$ ) were the least reported. Stress management ( $\underline{M}=18.0$ ,  $\underline{SD}=3.9$ ) and nutrition ( $\underline{M}=15.0$ ,  $\underline{SD}=4.0$ ) fell in-between. Pender, Walker, Sechrist, and Frank-Stromborg (1990) reported that white-collar workers scored highest on the HPLP subscales of self-actualization ( $\underline{M}=3.24$ ,  $\underline{SD}=.45$ ) and exercise ( $\underline{M}=3.24$ ,  $\underline{SD}=.59$ ) and lowest on stress management ( $\underline{M}=2.42$ ,  $\underline{SD}=.52$ ) and health responsibility ( $\underline{M}=2.23$ ,  $\underline{SD}=.54$ ). Nutrition ( $\underline{M}=2.66$ ,  $\underline{SD}=.67$ ) and interpersonal support ( $\underline{M}=3.14$ ,  $\underline{SD}=.55$ ) scores fell in-between. The findings of these studies suggest that those groups needing the most assistance in strengthening their health awareness and practices are blue-collar workers.

#### Health Promotion and Gender

Gender also has been a significant predictor of health-protective behaviors. Walker et al. (1988) found that women scored higher on the subscales of exercise, nutrition, and health responsibility, and higher on the total HPLP. In a study by Weitzel (1989), however, it was noted that women scored higher than men on the interpersonal support subscale. Duffy (1988), Lusk et al. (1995), Walker et al. (1988), Weitzel (1989), and Pender et al. (1990) found a positive association with females in promoting a healthy lifestyle. Women scored higher on the subscales of interpersonal support, health responsibility, and exercise, and on the total health-promoting lifestyle. Volden et al.

(1990) reported a significant difference in gender in relationship to health promotion, in that women scored higher than men on measures related to the subscales of interpersonal support, health responsibility, nutrition, exercise, and the overall health-promoting lifestyle profile and meaning of health. Because women are the primary caregivers, they are likely to have influences on the health-promotion behaviors and lifestyles for not only themselves, but also their families (Volden et al., 1990). While men scored higher on self-acceptance, there was no significant gender difference in perceived health status, stress management, or self-actualization. Volden et al. (1990) suggested that not only is education level a factor in self-acceptance, but so is the mere fact of gender-related involvement. Males tend to be involved in career development, community organizations, and sports activities that focus on competition, thereby reinforcing feelings of success which influence self-acceptance. Additionally, increased education is associated with higher self-acceptance. In one study conducted only with males, Rew (1990) noted that men who participated more in health-promoting behaviors had higher levels of education, self-esteem, and more positive body images than those with lower education levels, poor self-esteem, and a negative body image.

In a study conducted entirely with African-American women ( $N=187$ ), self-actualization ( $M=2.89$ ,  $SD=.53$ ) and interpersonal support ( $M=2.9$ ,  $SD=.59$ ) ranked the highest, while exercise ( $M=1.95$ ,  $SD=.65$ ) was the lowest of the six HPLP subscales (Ahijevych & Bernhard, 1994). In comparison to other studies which included women (Duffy, 1988; Pender et al., 1990; Walker et al., 1988; Walker et al., 1990;

Weitzel et al., 1990), African-American women had the lowest scores on self-actualization, exercise, and nutrition and second lowest on interpersonal support, while health responsibility was the highest ranked (Ahijevych & Bernhard, 1994).

The health-promotional behaviors of individuals with disabilities have also been studied. Stuifbergen and Becker (1994), in their study of 117 adults with disabilities, found that self-actualization ( $M=41.03$ ,  $SD=7.15$ ) and health responsibility ( $M=24.43$ ,  $SD=6.74$ ) ranked the highest, while exercise ( $M=9.83$ ,  $SD=3.92$ ) was the lowest. Exercise may have been ranked the lowest because those with disabilities may lack the physical capacity, opportunity, or the motivation to exercise.

Cognitive factors in many studies have been shown to be better predictors of health-promoting behaviors than demographic variables (Kuster et al., 1993; Pender et al., 1990; Stuifbergen et al., 1990; Weitzel, 1989; Weitzel & Waller, 1990). While demographic variables have been shown in some studies to have an impact on health-promoting behaviors, other studies show no correlation (Fleetwood & Packa, 1991; Duffy 1988).

#### Barriers to Health Promotion

Perceived barriers, which are defined as perceptions regarding the inconvenience, unavailability, or difficulty of a particular health-promoting option, are identified as one of the cognitive-perceptual factors influencing health-promotion behaviors (Pender, 1996; Stuifbergen et al., 1990). There is limited literature addressing the barriers to health promotion, and what has been published addresses factors that inhibit the use of

the health care system rather than health promotion.

Melnik (1988), in a critical review of the literature, identified two types of barriers to health promotion: structural and individual. Structural barriers include availability of services, organization of services, time, distance, cost, discrimination, and provider-consumer relationships. Demographic characteristics such as education and age, as well as ignorance, personal attitudes, degree of effort, family characteristics, and cultural factors comprise the individual barriers (Jones & Nies, 1996; Melnik, 1988; Northam, 1996).

The research on barriers to health-promotion behavior includes studies of skin care, breast self-examination, exercise, and the primary prevention behaviors of rest, nutrition, and exercise. In one study of 20 disabled individuals (paraplegics), Dai and Catanzaro (1987) explored the relationship between one's health beliefs regarding skin care and compliance with a prescribed regimen. The strongest correlation with compliance was perceived efficacy of skin care ( $r = .62$ ;  $p = .01$ ), followed by perceived severity of pressure sores ( $r = .56$ ;  $p = .01$ ), and perceived barriers ( $r = .33$ ; no  $p$  value reported).

In a correlational study of 380 women aged 35 years and over, Champion (1988) investigated the relationship between attitudinal variables and the intention, frequency, and proficiency of breast self-examination. The most powerful perceived barriers (embarrassment, unpleasantness, and difficulty) were negatively related to intent to practice breast self-examination ( $r = -.47$ ;  $p \leq .001$ ).

There has been much written about the benefits and barriers to exercise. The literature on known determinants of physical activity and regular exercise was reviewed by Dishman et al. (1985), with additional studies by Jones and Nies (1996), Gillis and Perry (1991), McAuley et al. (1994), and Nelson (1991). Factors negatively associated with participation in exercise programs included smoking, being overweight, blue-collar occupation, and the lack of awareness of the favorable effects that exercise has upon morbidity and mortality. Psychosocial, environmental, health-related concerns, and psychological factors such as anxiety and depression were additional reasons given for not participating in a routine exercise program.

In a study of 1,232 adults on the perceived barriers to increased activity, Booth (1997) found that in the youngest age group, the most frequently reported barriers to regular exercise were lack of time (45%), motivation, and childcare. Injury and poor health were most frequently cited as reasons for inactivity among those aged 60 to 78 years. Among elderly African-American women ( $N=30$ ) accessibility and availability were given as the most frequent barriers to exercise (Jones & Nies, 1996).

Duffy (1988) studied the primary prevention behaviors of one-parent families headed by women and the barriers that hindered practice of these behaviors. The behavior families felt to be the most important for maintaining health was nutrition, while lack of time was the major barrier to practicing the behavior, followed by the barriers of needing someone's support, lack of money, and feeling lazy. Negative influences on the family's ability to practice primary prevention included finances, day

care, parenting, inadequate support systems, and low self-esteem.

Because there was a need for a more structured method to measure barriers to health-promoting behavior, Stuifbergen et al. (1990) developed the Barriers to Health-Promoting Activities for Disabled Persons Scale. This scale was initially used with a sample of 135 participants recruited through two independent living centers. The most frequent barriers to health promotion cited by the participants were lack of money, being too tired, the impairment itself, and concern about crime. The most infrequent perceived barriers were lack of support from family and friends and no one to help. Unmarried participants perceived greater barriers to taking care of their health ( $r = -.22$ ;  $p < .01$ ). In addition to marital status, ethnicity also had an impact on the barriers, with Hispanics having a lower score and African-Americans having greater perceived barriers to health promotion. The type of disability one had also affected one's barrier score. Those without visual ( $r = .18$ ;  $p < .05$ ) or neuromuscular impairments ( $r = -.24$ ;  $p < .01$ ) had a lower score, or fewer barriers than individuals with other impairments.

#### Asthma-related Knowledge

If one lacks the knowledge of a disease process or the correct treatment plan, successful management is impossible. Therefore, education is a key to any successful treatment plan and has a role in promoting healthy behaviors. While a collaborative approach is needed and provides a starting point for enhancing educational goals, accentuating behavioral changes leading to self-management, and optimizing clinical outcomes (Yingling & Trocino, 1997), patients diagnosed with asthma also must be



willing to take some control over their own management of the disease. Providers must impart the knowledge and skills necessary to effect change, while the patient must demonstrate the willingness, interest, and motivation for behavioral changes (Alto, 1995).

One might predict that the higher the educational level, the more knowledge one would have about health-promoting behaviors. Ali and Bennett (1992), Kuster et al. (1993), Lusk et al. (1995), Riffle et al. (1990), Speake et al. (1989), and Weitzel (1989) found that higher education had not only a positive association with interpersonal support and nutrition, but also with the overall health-promoting lifestyle. Having the knowledge of the risk factors associated with coronary heart disease and osteoporosis in postmenopausal women was associated with higher health-promoting behaviors (Ali & Bennett, 1992; Fleetwood & Packa, 1991). In addition, Lusk et al. (1995) noted that higher education consistently predicted higher scores. Those with a high school education or less tended to have lower scores than the other groups (ranging from eighth grade to graduate degree) on health-promoting lifestyle, self-actualization, and interpersonal support. Those with college degrees scored higher on stress management, exercise, and health responsibility. This suggests that the better educated people are, the more likely they are to assume responsibility for their health. The goal of any educational plan is to provide patients with the knowledge and skills to assume responsibility for their own care, whether it is in disease management or health promotion (Osman, 1996b).

Increased knowledge, however, does not always predict improved lifestyles or

affect changes in unhealthy behaviors. Epstein and Pyoala (1987) and Pender et al. (1990) found no significant association between education and health-promoting lifestyle. Although participants were aware of the risk factors associated with coronary artery disease, changes in behavior were not always seen. This has important implications for providers caring for a specific patient group. It is important to determine what values and motivations are present that will affect a change. Just having the knowledge may not be effective. Encouraging the patient to take control of his or her life may be of some benefit in effecting change. When people feel in control of a situation, they are better equipped to deal with the changes that may be required, thus adopting a healthier lifestyle. The greater the knowledge about positive behavioral practices, the more likely are practices of preventive behaviors. This points to the fact that providers should always assess an individual's previous educational background and develop a plan accordingly.

### Summary

The literature selected and presented in this review provides a review of the current status of scientific knowledge concerning health promotion, perceived health competence, and barriers to health promotion. There are many factors that must be assessed when developing a health promotion plan for a patient with asthma. Not only must a collaborative approach be developed, but patients must also feel that they are capable of affecting their own care. One way to accomplish this is to determine what type of health-promoting behaviors one has developed in the past. Cognitive factors such as definition of health, importance of health, perceived health status, self-efficacy, control

of health, and the benefits and barriers that individuals encounter must be taken into consideration when developing a plan. These are areas in which the provider can assist patients in effecting changes in their health-promoting behaviors. Areas that are not as easily amendable to change such as the modifying factors must still be assessed, because they may determine how successful the patient is in maintaining lifelong changes.

## CHAPTER 3

### METHODOLOGY

#### Design

This study was conducted using a cross-sectional, correlational design. Data were collected during a 3-month interval. A descriptive design does not attempt to explain a phenomenon but rather to observe, describe, and document the relationship among variables (Polit & Hungler, 1995), in this case health promotion in patients with asthma.

#### Selection of Sample

A convenience sample of 68 patients, representing a sample size of 10 to 15 patients per variable, was obtained from the Asthma Clinic and the Primary Care Clinic of the Ambulatory Care Center from the Medical College of Virginia Hospitals at the Virginia Commonwealth University, which is a 1058-bed Health Science Center in a mid-Atlantic state. For the purpose of this study, any patient who was seen in the Asthma Clinic more than once was classified as receiving their asthma management through the Asthma Clinic. Any patients who had not been seen through the Asthma Clinic were classified according to where they received their asthma management, either through the Primary Care Clinic or Emergency Department. Patients who used the Emergency Department as the site for asthma management and who, during their first visit to the

Asthma Clinic, agreed to participate in this study were classified as utilizing the Emergency Department as their site for asthma management. Patients classified as receiving their asthma management in the Primary Care Clinic were patients seen in the Primary Care Clinic or who were referred by their primary care provider to the Asthma Clinic. These patients had not been seen in the Asthma Clinic previously. The Asthma Clinic is specifically designed to treat the indigent population. Any patient with asthma who was 18 years of age or older and willing to participate in this study was included. Those patients with other chronic illnesses such as congestive heart failure, chronic obstructive pulmonary disease, sarcoidosis, or any psychiatric illnesses were excluded from this study. Data was collected during the months of December, January, and February of 1997-1998.

#### Data Collection

Approval to conduct this research was obtained from the Committee on the Conduct of Human Research and Director of Nursing Research at the Medical College of Virginia Hospitals. Asthma Clinic was held every Monday from 8:00 a.m. to 12 p.m. During every visit the appointment schedule was reviewed for patients meeting the study criteria. The researcher approached all patients meeting the criteria for inclusion in the study. They were informed as to the nature of the study and invited to participate. Explanation of the study was provided verbally and in writing (Appendix A). After agreeing to participate, each patient completed the study questionnaires in an examining room or conference room in the clinic. If a patient reported difficulty reading the

questionnaires, the investigator read the questionnaire items exactly as printed. The investigator was available to answer any questions, but did not direct the patient on how to answer any questionnaire item.

### Research Questions

The purpose of this descriptive study was two-fold: (1) to describe the health-promoting behaviors, the barriers to health promotion, knowledge of asthma, and perceived health competence (self-efficacy) of persons with chronic asthma, and (2) to examine the relationships among knowledge of asthma, health-promoting lifestyle, barriers to health promotion, perceived health competence (self-efficacy), and health promoting behaviors and among gender, race, and site of asthma management. The specific research questions this study was designed to answer were:

1. What health-promotional behaviors do asthma patients practice most often?
2. What is the perceived health competence of asthma patients?
3. What is the disease-related knowledge of asthma patients?
4. What perceived barriers to health-promotional behaviors are most often identified by asthma patients?
5. What relationships exist between health-promotional behaviors, perceived health competence, barriers to health promotion, and asthma-related knowledge?
6. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between males and females and between Caucasian and non-Caucasian patients with

asthma?

7. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist among patients with mild intermittent, and mild, moderate, and severe persistent asthma?

8. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between asthma patients requiring inhaled steroids and those who do not require inhaled steroids?

9. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between patients receiving asthma care in the Asthma Management Program and those receiving care in the Primary Care Clinic and Emergency Department?

#### Data Analysis

Data were analyzed using descriptive statistics, measures of reliability, Pearson's correlations, and tests of significance. Cronbach's alpha (coefficient alpha), which is a widely used reliability index that estimates the internal consistency or homogeneity of a measure composed of several subparts (Polit & Hungler, 1995), was computed for each instrument. Pearson's correlations were used to determine the relationships among health promotion, perceived health competence, barriers to health promotion, and asthma-related knowledge. Parametric statistical testing (t-tests) was used for analyzing the difference between the means (Polit & Hungler, 1995), to determine differences in the study

variables between males and females, Caucasians and non-Caucasians, and site of asthma management. Analysis of variance (ANOVA) by educational level, different severity of disease classifications, and site of asthma management was performed if a significant number of participants fell into more than two groups. ANOVA is a statistical procedure for testing mean differences among three or more groups by comparing the variability between groups to the variability within groups (Polit & Hungler, 1995).

### SELECTION OF INSTRUMENTS

The instruments that were used in this study include a demographic data questionnaire, the Health-Promoting Lifestyle Profile II (Pender, 1996; Walker et al., 1987), Perceived Health Competence Scale (Smith et al., 1995), Barriers to Health-Promoting Activities for Disabled Persons Scale (Stuifbergen & Becker, 1994; Stuifbergen et al., 1990), and Asthma "IQ" test (Salyer & Davis, unpublished, 1997).

#### Demographic Data

The demographic data questionnaire (Appendix B) provides information on age, gender, marital status, educational level, and ethnic background. Additionally, data were collected on length of diagnosis with asthma and the medications the participant was currently taking for asthma control.

#### Health-Promoting Lifestyle Profile II

The Health-Promoting Lifestyle Profile II (HPLP-II) (Appendix C), developed by Walker, Sechrist, and Pender (1996), is designed to measure health-promoting behavior. The Health Promotion Model theorizes that modifying factors and individuals'



perceptions (cognitive-perceptual) of themselves and their health play a significant role in determining lifestyle activities (Pender, 1996). The model includes cognitive-perceptual and modifying factors that reflect the decision-making process. Cognitive-perceptual factors include the importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, perceived benefits of health-promoting behaviors, and perceived barriers to health-promoting behaviors. The modifying factors include demographic characteristics, biologic characteristics, interpersonal influences, situational factors, and behavioral factors. The model also identifies a taking-action phase, in which cues help motivate one to engage in health promoting behaviors.

The HPLP helps to distinguish lifestyle strengths and resources, in addition to areas for further growth (Pender, 1996). The Health-Promoting Lifestyle Profile I (HPLP-I) was originally a 107-item instrument. After psychometric evaluation using a sample of 952 adults, item- and factor-analysis resulted in a 48-item questionnaire. The internal consistency of the six subscales ranged from .76 to .92, and .92 on the total scale (Walker et al., 1987). Two-week test-retest reliability coefficients were .81 to .90 on the subscales and .93 for the total scale.

Further revisions resulted in the Health-Promoting Lifestyle Profile II (HPLP-II), which now consists of a 52-item summated behavior rating scale. It uses a 4-point response format (1 = never, 2=sometimes, 3=often, 4 = routinely) to measure the frequency of self-reported health-promoting behaviors in six different domains: health

responsibility (9 items), physical activity (8 items), nutrition (9 items), spiritual growth (9 items), interpersonal relations (9 items), and stress management (8 items). The higher the score, the higher the level of health-promoting behavior. Cronbach's alpha coefficients for the subscales of the Health-Promoting Lifestyle Profile II have been reported as follows: Health Responsibility (.86), Physical Activity (.85), Nutrition (.89), Spiritual Growth (.86), Interpersonal Relations (.87), Stress Management (.79), and Total HPLPII (.94) (Walker et al., 1987).

#### Perceived Health Competence Scale

Self-efficacy, or a sense of competence, is a learned cognitive belief (Bowsher & Keep, 1995) associated with many positive outcomes (Smith, Wallston, & Smith, 1995). Until the development of the Perceived Health Competence Scale (PHCS) (Appendix D), a means to measure the sense of competence in the domain of health behavior was not available. Most of the available instruments are specific to a particular health behavior or are measures of a general sense of self-efficacy (Smith et al., 1995). Thus, Smith et al. (1995) developed the PHCS to provide a measure of perceived competence. It is a domain-specific measure in that it measures the degree to which an individual feels capable of reasonably managing his or her health outcomes. The PHCS is an 8-item measure that uses a 5-point Likert scale (1 = strongly agree, 2 = agree, 3 = uncertain, 4 = disagree, 5 = strongly disagree). Containing both outcome and behavioral expectations, the PHCS was developed to fill a void between existing behavior-specific self-efficacy measures and global perceived competence measures. It can be easily and quickly

administered. As reported by Smith et al. (1995), there have been five studies (with persons with rheumatoid arthritis, adults, two studies of undergraduates, and West Point cadets) in which the PHCS was used. Internal consistency of the scale was high across all five samples, with Cronbach's alpha ranging from .82 to .90. Additionally, the scale was stable over a period of one-week to 2.5 years, with the undergraduate and cadet sample groups stable over the one-week interval ( $r = .82$ ;  $r = .59$  respectively) and the participants with arthritis stable over the 2.5 years ( $r = .60$ ). These studies include samples of young adult students, working adults, and individuals with a chronic illness such as arthritis (Smith et al., 1995).

In a study involving 238 individuals with rheumatoid arthritis, lower levels of health competence were reported than in the four studies with other, largely healthy samples, indicating that those with a chronic disorder may perceive themselves as being unhealthy and incapable of effecting behavioral change. One reason cited by the authors is that young, healthy individuals may not have experienced the effects of the normal aging process and, therefore, may have higher perceived health competence. Additionally, those with a chronic illness may see themselves as unable to control or affect their disease process. Cadets undergo a rigorous basic training program upon first arriving at West Point and this was the reason given for the decrease in health competence over the 4-month study period with this group (Smith et al., 1995).

The PHCS consistently correlated with indicators of health status variables such as health functioning, self-rated health status, physical and psychosocial impairment, and

pain, with correlations ranging from .40 to .50 ( $p < .001$ ), indicating construct validity of the PHCS. These studies showed that not only was there a consistent and substantial relationship with health status, but that the causal relationship between health status and perceived health competence is probably a reciprocal one. In two studies done using the PHCS, perceived health competence and internal locus of health control were significantly correlated in only one sample (Smith et al., 1995). Although the reason for lack of correlation in one sample is uncertain, this dissociation between competence beliefs and locus of control indicates that the two are distinct and different constructs. The PHCS has been found to be consistently positively correlated with a variety of general measures associated with a positive state of well-being and mental adjustment. In addition, it has been negatively correlated with measures that usually indicate poor adjustment, such as depressive symptoms and negative emotion (Smith et al., 1995).

One important test for validity of the PHCS was whether the PHCS was related to health behavior intentions and actual health behavior. Two samples using undergraduate students helped to answer this question. As with the findings in other studies (Fleetwood & Packa, 1991; Lusk & Kelemen, 1993; Neuberger et al., 1994; Pender et al., 1990; Stuijbergen et al., 1990; Weitzel, 1989; Weitzel & Waller, 1990), perceived health competence was implicated as important in predicting intended or actual health behavior. However, the exact nature of the relationship between health competence and health behavior was unclear. Individuals who perceived themselves to be competent in their health care saw themselves as less susceptible to illness (Smith et

al., 1995). In the first undergraduate sample ( $n=186$ ), health competence and value of health correlated in predicting behavioral intentions ( $r = -.18$ ;  $p < .05$ ). However, the form of this interaction is not entirely consistent with theory, the theory being that health-promoting behaviors are likely to occur when persons value health and have a high-perceived health competence. The observed interaction in the first undergraduate sample ( $n=186$ ) indicated that either health value or health competence was sufficient to produce elevated intentions of performing health-promoting behaviors. In the second undergraduate sample ( $n=54$ ), the connection between health value and health competence was not observed. Furthermore, perceived health competence was related to both intended and enacted health behaviors. Although these studies are small, they clearly attest to the importance of health competence for understanding health behavior, thereby highlighting the importance of examining the association between values related to health, competence beliefs, and behaviors in future research (Smith et al., 1995).

In summary, the PHCS is used to measure the degree to which individuals feel capable of reasonably managing their health outcomes. Individuals who have higher levels of perceived competence, positive well-being, and mental adjustment tend to feel healthier and practice more health-promoting behaviors than those with lower levels of perceived health competence. In addition, individuals who value health more tend to have higher feelings of perceived competence and are more likely to engage in healthier behaviors than individuals with lower health values and perceived health competence (Smith et al., 1995).

### Barriers Scale

Perceived barriers to health-promoting behaviors are perceived blocks or hindrances to action (Pender, 1990). The limited literature available regarding barriers suggests that barriers have important implications for engaging in health-promoting behaviors and supports the need for a method of measuring barriers to health-promoting behavior. Because Stuifbergen et al. (1990) felt a need for more specific information about health promotion and barriers, they developed the Barriers to Health Promoting Activities Scale (Appendix E). Items for this scale originated from three sources: (1) literature review, (2) content analysis of interview data conducted from a pilot study that was part of a larger study of the health-promoting attitudes and behaviors of adults with disabilities, and (3) expert consultation.

The Barriers to Health Promoting Activities Scale (Stuifbergen & Becker, 1994; Stuifbergen et al., 1990), is an 18-item, 4-point Likert-type scale (1 = never, 2 = sometimes, 3 = often, 4 = routinely) that requests individuals to indicate how often the listed barriers keep them from taking responsibility for their health. Individual item scores were compiled to produce a total score. The higher the score an individual receives on this summated rating scale, the greater the perceived barriers. Internal consistency reliability (Cronbach's alpha) was .82, with a 2-week test-retest reliability of .75. Discriminate validity was supported by a *t*-test analysis establishing significant differences in scores between disabled persons (*n*=135) and a comparison group of non-disabled individuals (*n*=144) (Stuifbergen & Becker, 1994).

### Asthma-related Knowledge

The Asthma “I.Q.” test (Appendix F) is a 15-item true or false criterion-referenced questionnaire adapted by Salyer and Davis (unpublished data) from a pamphlet published by the American Lung Association. The test is scored by totaling the number of correct responses to the statements.

### Severity of disease

Severity of disease and its relationship to health promotion was also investigated. The more severe the disease process, the more limitations placed on an individual. The classification of asthma is based on the National Asthma Education and Prevention Program guidelines (1997). Patients were either classified as mild intermittent, mild persistent, moderate persistent, or severe persistent based on their reported medication usage.

The National Asthma Education and Prevention Program guidelines (1997) use a stepwise approach to classification; with step (1) being mild intermittent, step (2) mild persistent, step (3) three moderate persistent, and step (4) four being severe persistent. Mild intermittent indicates those patients who do not require medication on a daily basis. They require only a short-acting inhaled beta<sub>2</sub>-agonist to treat symptoms less than two times a week. Patients classified as mild, moderate, or severe persistent require medications on a daily basis. Those with mild persistent require long-term control medication such as daily anti-inflammatory medication (low dose), sustained-release theophylline, or leukotrienes. Quick-relief medications continue to be available to treat

exacerbations. Patients classified as moderate persistent asthma require increased dosages of inhaled anti-inflammatory medications (medium dose) or long-acting bronchodilator added to low-dose inhaled corticosteroids. Patients classified as severe persistent require high doses of inhaled corticosteroids and a long-acting bronchodilator, either in the form of inhaled long-acting beta<sub>2</sub>-agonist, sustained-release theophylline, or long-acting beta<sub>2</sub>-agonist tablets and corticosteroid tablets (National Asthma Education and Prevention Program, 1997).

### Limitations

The findings of this study cannot be generalized beyond the small, nonprobability sample, and because it is a correlational study, no causal relationships can be established. Also, individuals who agreed to participate may possess different attributes from individuals who declined. Thus, the findings may not be representative of other low-income individuals. Self-reports carry threats to both the validity and reliability of the information. Individuals may have been influenced by the desire to give information they thought was expected. Attempts to control this included using the survey form in a straight-forward manner and avoiding offering suggestions with all participants.



## CHAPTER FOUR

### ANALYSIS AND INTERPRETATION OF RESULTS

#### Introduction

The purpose of this chapter is to present the results of this investigation. It describes the demographic attributes of the sample, testing of the variables, and the results of tests for validity and reliability. This investigation utilized a descriptive correlational design. The purpose of this study was two-fold: (1) to describe the health-promoting behaviors, the barriers to health promotion, knowledge of asthma, and perceived health competence (self-efficacy) of persons with chronic asthma, and (2) to examine the relationships among knowledge of asthma, health-promoting lifestyle, barriers to health promotion, perceived health competence (self-efficacy), and health promoting behaviors and among gender, race, and site of asthma management. The specific research questions this study was designed to answer were:

1. What health-promotional behaviors do asthma patients practice most often?
2. What is the perceived health competence of asthma patients?
3. What is the disease-related knowledge of asthma patients?
4. What perceived barriers to health-promotional behaviors are most often identified by asthma patients?

5. What relationships exist between health-promotional behaviors, perceive health competence, barriers to health promotion, and asthma-related knowledge?
6. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between males and females and between Caucasian and non-Caucasian patients with asthma?
7. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist among patients with mild intermittent, and mild, moderate, and severe persistent asthma?
8. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between asthma patients requiring inhaled steroids and those who do not require inhaled steroids?
9. What differences in health-promotional behavior, perceived health competence, barriers to health promotion, and asthma-related knowledge exist between patients receiving asthma care in the Asthma Management Program and those receiving care in the Primary Care Clinic or Emergency Department?

#### Characteristics of the Sample

A convenience sampling technique was employed to select the participants in this study. Of the 75 patients approached, 3 declined, 3 did not meet the criteria for inclusion in the study, and one did not complete the questionnaire, resulting in 90.6% participation. The 68 participants had a documented diagnosis of asthma and were receiving care in one

of three areas: Asthma Clinic (51.5%), Primary Care Clinic (39.7%), or the Emergency Department (8.8%). Participants included 20 (29.4%) males and 48 (70.6%) females. The mean age of the participants was 40.8 (range = 21 – 69 years). The mean age at time of diagnosis of asthma was 22.6 years. The sample was comprised of 42 (61.8%) African-Americans and 20 (29.4%) Caucasians. Educational level of the sample reflects that more than half (57.4%) of the participants had some high school or had graduated from high school. Of the 68 individuals, 63 (92.5%) were on some form of prescribed inhaled corticosteroid. The five participants who were not receiving any inhaled corticosteroids used the Primary Care Clinic or the Emergency Department for their asthma management. The high percentage of individuals on inhaled corticosteroids is an expected finding since these medications are the recommended treatment for asthma patients. However, because of the high number of participants on inhaled steroids and the limited number who were not taking any steroids, comparisons between these two groups could not be made. Additionally, because over 77% of the sample were classified as having moderate persistent asthma, the numbers of participants in the other three groups were too small to determine differences among different asthma severity groups. Additional demographic information is summarized in Table 1.

**Table 1. Demographic Characteristics of Sample (N=68)**

Variables	Frequency	Percent
<b>Gender</b>		
Male	20	(29.4)
Female	48	(70.6)
<b>Marital Status</b>		
Single, never married	16	(23.5)
Married	15	(22.1)
Divorced or separated	34	(50.0)
Widow	3	(4.4)
<b>Education</b>		
Grammar School (1-6)	3	(4.4)
Junior High (7-9)	11	(16.2)
High School (10-12)	39	(57.4)
Some College	8	(11.8)
College Graduate	4	(5.9)
Masters	3	(4.4)
<b>Race</b>		
Asian	0	(0.00)
African-American	42	(61.8)
Caucasian	20	(29.4)
Hispanic	1	(1.5)
Native American	3	(4.4)
Other	2	(2.9)
<b>Severity of Asthma</b>		
Mild intermittent	7	(10.3)
Mild persistent	8	(11.8)
Moderate persistent	53	(77.9)
Severe persistent	0	(0.00)
<b>ER visits within last year</b>		
No	23	(33.8)
Yes	45	(66.2)
<b>Daily oral steroids</b>		
No	64	(94.1)
Yes	4	(5.9)
<b>Daily inhaled steroids</b>		
No	5	(7.5)
Yes	63	(92.5)
<b>Asthma Management</b>		
Primary Clinic	27	(39.7)
Asthma Clinic	35	(51.5)
Emergency Department	6	(8.8)

### Instrumentation

A number of instruments were used in this study to assess the health-promoting lifestyle, perceived health competence, barriers to health-promoting behavior, and asthma-related knowledge of patients with asthma. A discussion of the instruments used and the reliability in this study follows.

#### Health Promoting Lifestyle Profile II

The Health Promotion Lifestyle Profile II (HPLP) (Walker et al., 1987) measures the frequency of self-reported health-promoting behaviors in six different domains. Summated scores were computed for all HPLP subscales and the total scale. The higher the score, the higher the level of health-promoting behaviors. In this study the internal consistency reliability (Cronbach's alpha) for the 52-item scale was .93 and is similar to the findings reported by Walker et al. (1987). The Cronbach's alpha for the subscales of the Health-Promoting Lifestyle Profile II have been reported as follows: Health Responsibility (.86), Physical Activity (.85), Nutrition (.89), Spiritual Growth (.86), Interpersonal Relations (.87), Stress Management (.79), and total HPLP II (.94) (Walker et al., 1987). The alpha coefficients for the subscales in this study ranged from .66 to .84 (Table 2).

#### Perceived Health Competence Scale

Perceived health competence was measured using the Perceived Health Competence Scale (PHCS) developed by Smith et al. (1995). This scale measures the degree to which individuals feel capable of effectively managing their health

outcomes. A summated score was computed for the total scale. The higher the score, the higher the perception of health competence. In this study the internal consistency reliability (Cronbach's alpha) for the 8-item scale was .72. Smith et al. (1995) reported higher internal consistency scores than were found in this study, ranging from .82 to .90 (Table 2).

### Barriers Scale

The Barriers Scale (Stuifbergen et al., 1990) was used to determine how often barriers to health promotion kept patients with asthma from taking care of their health. A summated score was computed for the total scale. The higher the score, the more the subject felt those barriers interfered with health-promoting behaviors. In this study the internal consistency reliability (Cronbach's alpha) for the 18-item scale was .85 (Table 2). These results are similar to those reported by Stuifbergen et al. (1990), who reported an alpha of .82.

## Descriptive Statistics

### Health Promoting Lifestyle

The mean score on the HPLP, which measures general health promotion, was 125.43 (SD=21.52). An examination of the mean subscale scores revealed that asthma patients tended to score highest on spiritual growth (M=25.25, SD=5.07), interpersonal relations (M=25.01, SD=4.49), and health responsibility (M=21.19, SD=3.91), and lowest on physical activity (M=14.88, SD=4.85), stress management (M=18.84, SD=4.08), and nutrition (M=20.25, SD=4.83) (Table 2). These subscale scores reflect

that the participants in this study “often” engaged in behaviors promoting spiritual growth and good interpersonal relationships; however, they engaged in behaviors that reflect health responsibility only “sometimes” and only employ strategies to manage stress “sometimes.” As indicated by their level of participation in exercise or non-sedentary activities, they were physically active only “sometimes,” and reported incorporating good nutrition only “sometimes.”

**Table 2. Scale and Subscale Means, Standard Deviations, and Reliability of the Health Promoting Lifestyle Profile, Perceived Health Competence Scale, Barriers Scale, Asthma “IQ Test” (N=68)**

	Mean	SD	Theoretical Mean	Min	Max	Range	Alpha
Total HPLP	125.43	21.52	130.0	1.35	3.26	1.91	.93
Health Responsibility	21.19	3.91	22.5	1.35	2.76	1.41	.66
Physical Activity	14.88	4.85	20.0	1.50	2.45	.96	.83
Nutrition	20.25	4.83	22.5	1.88	2.63	.73	.76
Spirituality	25.25	5.07	22.5	2.28	3.26	.98	.84
Interpersonal Relations	25.01	4.50	22.5	2.43	3.18	.75	.79
Stress Management	18.84	4.08	20.0	1.87	2.78	.91	.74
Perceived Health Competence Scale	25.82	4.65	24.0	2.26	4.07	1.81	.72
Barrier Scale	33.62	8.57	45.0	1.45	2.84	1.39	.85
Asthma “IQ” Test	12.91	1.63		8.00	15.00	7.00	N/A

Min=minimum, Max=maximum

#### Perceived Health Competence

The Perceived Health Competence scale had a total mean of 25.8 (SD=4.65), indicating that individuals in this study perceived some control over their health status. On the Perceived Health Competence Scale, the items that reflect perceived control

include: (1) I handle myself well with respect to my health ( $\underline{M}=4.07$ ,  $\underline{SD}=.78$ ), (2) I succeed in the projects I undertake to improve my health ( $\underline{M}=3.65$ ,  $\underline{SD}=.81$ ), (3) I'm generally able to accomplish my goals with respect to my health ( $\underline{M}=3.60$ ,  $\underline{SD}=.85$ ), and (4) I am able to do things for my health as well as most people ( $\underline{M}=3.47$ ,  $\underline{SD}=1.04$ ).

Participants were uncertain about their control over changing things they don't like about their health that are ineffective ( $\underline{M}=3.01$ ,  $\underline{SD}=1.04$ ), and perceived that plans for managing their health don't work out well ( $\underline{M}=2.96$ ,  $\underline{SD}=1.06$ ). Participants perceive they were unable to find healthy solutions to health problems ( $\underline{M}=2.79$ ,  $\underline{SD}=1.25$ ), and that their health did not turn out as they would like ( $\underline{M}=2.26$ ,  $\underline{SD}=1.11$ ) (Table 3).

#### Barriers to Health Promotion

The mean score for the Barriers Scale 33.6 ( $\underline{SD}=8.57$ ) reflects that the participants in this study perceived barriers to health promotion. The barriers that participants rated as the most frequently encountered were (1) lack of money ( $\underline{M}=2.84$ ), (2) too tired ( $\underline{M}=2.25$ ), (3) bad weather ( $\underline{M}=2.10$ ), and (4) concern about safety ( $\underline{M}=2.04$ ). Difficulty with communication, impairment, and lack of help from health care professionals were perceived as infrequent problems (Table 4).

#### Asthma-related Knowledge

The mean score on the Asthma "IQ" test, which measures general asthma knowledge, was 12.91 ( $\underline{SD}=1.63$ ). Of the 68 participants, 67.6% answered 13 to 15 of the questions correctly and of this 67.6%, 30.9% answered 13 of the 15 questions correctly. The median was 13.00. These results reflect that the participants in this study



were fairly well educated about their disease and its management.

**Table 3. Mean items ratings of Perceived Health Competence Scale (N=68)**

Item	<u>M</u>	<u>SD</u>
I handle myself well with respect to my health *	4.07	.78
I succeed in the projects I undertake to improve my health *	3.65	.81
I'm generally able to accomplish my goals with respect to my health *	3.60	.85
I am able to do things for my health as well as most people	3.47	1.04
I find my efforts to change things I don't like about my health are ineffective	3.01	1.04
Typically, my plans for my health don't work out well	2.96	1.06
It is difficult for me to find effective solutions to the health problems that come my way	2.79	1.25
No matter how hard I try, my health just doesn't turn out the way I would like	2.26	1.11
* = recoded items		

**Table 4. Mean item ratings of Barriers Scale items (N=68)**

Item	<u>M</u>	<u>SD</u>
Lack of money	2.841	.96
Too tired	2.246	.88
Bad weather	2.101	.96
Concern about safety	2.043	1.13
Lack of transportation	2.043	1.01
Lack of convenient facilities	1.957	.88
Interferes with other responsibilities	1.870	.92
No one to help me	1.855	.96
Lack of time	1.841	.83
Feeling what I do doesn't help	1.812	.71
Lack of information about what to do	1.797	.93
Feeling I can't do things correctly	1.739	.80
Not interested	1.652	.82
Lack of support from family/friends	1.638	.78
Embarrassment about my appearance	1.609	.88
Lack of help from health care professionals	1.565	.90
Impairment	1.565	.83
Difficulty with communication	1.449	.63

### Correlational Analyses

Pearson's correlation analysis was performed on the data to investigate bivariate relationships among the variables (Table 5). All subscales of the HPLP-II were positively correlated, which is an expected finding because all the subscales are components of the HPLP-II. Correlations among the variables of health-promoting lifestyle, perceived health competence, barriers to health promotion, asthma-related knowledge, and age were weak (Table 5). No strong correlations, defined as  $r > .60$ , were found in this sample. Perceived health competence was positively correlated with physical exercise ( $r=.49$ ;  $p=.01$ ), interpersonal relations ( $r=.27$ ;  $p=.03$ ), spiritual growth ( $r=.39$ ;  $p=.01$ ), and stress management ( $r=.27$ ;  $p=.03$ ), indicating that participants who felt they had more control over their health were more likely to participate in health-promotional behaviors such as physical activity and stress management, perceived better interpersonal relationships, and experienced greater spiritual growth than subjects who perceived less control over their health. Barriers to health promotion had a negative but significant correlation with perceived health competence ( $r=-.53$ ;  $p<.01$ ). In other words, as barriers to health promotion increased, individuals' feelings of perceived health competence or control over their health decreased, indicating they felt less competent in managing their health. Age was positively correlated with barriers to health promotion ( $r=.28$ ;  $p=.02$ ), indicating that older subjects encountered more barriers to health promotion than those who were younger.

**Table 5. Coefficients and p-values for Study Variables**

	HR	PA	Nutrition	IPR	Spirituality	SM	PHCS	BS	IQ	Age
HR	1.00	.40 ( $<.01$ )	.60 ( $<.01$ )	.53 ( $<.01$ )	.54 ( $<.01$ )	.55 ( $<.01$ )	.10 (.43)	.08 (.51)	.32 (.01)	.18 (.14)
PA		1.00	.43 ( $<.01$ )	.33 (.01)	.54 ( $<.01$ )	.62 ( $<.01$ )	.49 ( $<.01$ )	-.22 (.07)	.24 (.05)	-.02 (.86)
Nutrition			1.00	.54 ( $<.01$ )	.54 ( $<.01$ )	.66 ( $<.01$ )	.20 (.11)	.03 (.83)	.18 (.15)	.14 (.25)
IPR				1.00	.73 ( $<.01$ )	.49 ( $<.01$ )	.27 (.03)	-.07 (.58)	.25 (.04)	.05 (.69)
Spirituality					1.00	.71 ( $<.01$ )	.39 ( $<.01$ )	-.03 (.82)	.24 (.05)	-.01 (.95)
SM						1.00	.27 (.03)	.04 (.77)	.22 (.07)	.60 (.62)
PHCS							1.00	-.53 ( $<.01$ )	.25 (.04)	-.06 (.65)
BS								1.00	-.16 (.20)	.28 (.02)
IQ									1.00	.05 (.70)
Age										1.00

HR=Health Responsibility IPR=Interpersonal Relations PHCS=Perceived Health Competence IQ=Ashtma-related Knowledge  
PA=Physical Activity SM=Stress Management BS=Barriers

Asthma-related knowledge was positively correlated with health responsibility ( $r=.32$ ;  $p=.01$ ), physical exercise ( $r=.24$ ;  $p=.05$ ), interpersonal relations ( $r=.25$ ;  $p=.04$ ), spiritual growth ( $r=.24$ ;  $p=.05$ ), and perceived health competence ( $r=.25$ ;  $p=.04$ ), indicating that subjects who were more knowledgeable about their disease were more responsible for their health, engaged in more physical activity, had better interpersonal relationships, greater spiritual growth, and perceived that they were more competent to manage their health than subjects who were less knowledgeable. Although no significant differences in knowledge were found between males and females, Caucasians and non-Caucasians, or site of asthma care, subjects seen in the Primary Care Clinic had a higher percentage of correct answers on the asthma “IQ” test (67.8% vs. 61.7%). A total of 67.6% of all subjects answered 13 to 15 of the questions correctly on the asthma “IQ” test. The two most frequently missed questions on the asthma knowledge test were that asthma episodes usually occur suddenly without warning (55.1%) and that asthma is an emotional or psychological illness (43.5%). Statistics on individual items are reported in Table 6.

### Inferential Statistical Analyses

#### Tests of Significance

Data were further analyzed by  $t$ -tests and one-way analysis of variance (ANOVA) to determine if there were significant differences in the variables of gender, race, education, and site in which participants received asthma care and between the variables of health-promoting lifestyle, perceived health competence, barriers to health promotion,

**Table 6. Item Accuracy for Asthma Knowledge Scale (N=68)**

Item	# and % True	# and % False
1. Smoke from cigarettes, cigars, and pipes can bring on an asthma attack	67 (98.6)	1 (1.4)
2. People with asthma have sensitive lungs that react to certain things, causing the airways to tighten, swell, and fill with mucous	67 (98.6)	1 (1.4)
3. People with asthma can monitor how well their lungs are functioning with a peak flow meter	67 (98.6)	1 (1.4)
4. Asthma patients and their doctors and nurses need to work together to manage their disease	67 (98.6)	1 (1.4)
5. If asthma attacks are brought on by exercise, medicines can be taken before exercising to help avoid an attack	65 (95.7)	3 (4.3)
6. Asthma cannot be cured but it can be controlled	65 (95.7)	3 (4.3)
7. Early symptoms of an asthma attack can be recognized and treated to prevent a serious attack	64 (94.2)	4 (5.8)
8. There are medicines that can be prescribed to prevent asthma attacks	63 (92.8)	5 (7.2)
9. Strong emotions can sometimes make asthma worse	62 (91.3)	6 (8.7)
10. Other medical problems, such as indigestion and "stuffy" nose can make your asthma worse	58 (85.5)	10 (14.0)
11. People with asthma should exercise regularly	56 (82.6)	12 (17.4)
12. Asthma symptoms frequently occur at night	45 (66.7)	23 (33.3)
13. Asthma episodes usually occur suddenly without warning	37 (55.1)	31 (44.9)
14. Asthma is an emotional or psychological illness	29 (43.5)	39 (56.5)
15. There is nothing that you can do to reduce your asthma "triggers" around the house	5 (8.7)	63 (91.3)

and asthma-related knowledge. Because the majority of the subjects fell into only two categories of race, for the purpose of data analysis the categories of ethnic status (Table 1) were recoded into a dichotomous variable: Caucasians or non-Caucasians.

Although some trends were noted, there were no significant differences in health-promoting lifestyle, perceived health competence, barriers to health promotion and asthma-related knowledge between males and females (Table 7). The only statistically significant difference between Caucasians and non-Caucasians was in the spiritual growth subscale ( $F = 2.17$ ;  $p < .05$ ). Caucasians reported behaviors reflecting greater spiritual growth than did non-Caucasians (Table 8). There were no significant difference noted between groups receiving care in the different sites of asthma management (Table 9).

**Table 7. Means and standard deviations of scale scores by gender (N=68)**

Variable	Males		Females		F	p
	Mean	SD	Mean	SD		
Total HPLP	131.65	24.87	122.83	19.66	1.60	.19
Health Responsibility	21.30	4.45	21.14	3.71	1.44	.30
Physical Activity	17.50	5.10	13.79	4.35	1.38	.37
Nutrition	20.70	5.61	20.06	4.52	1.54	.23
Interpersonal Relations	24.80	4.77	25.10	4.42	1.17	.64
Spirituality	26.50	5.20	24.73	4.97	1.09	.78
Stress Management	20.85	4.37	18.00	3.68	1.41	.34
Perceived Health Competence	26.20	4.20	25.66	4.86	1.34	.49
Barrier Scale	34.50	7.24	33.31	9.20	1.61	.26
Asthma Knowledge	13.00	1.75	12.87	1.59	1.20	.59

**Table 8. Means and standard deviations of scale scores by race (N=68)**

Variable	Caucasian		Non- Caucasian		F	p
	Mean	SD	Mean	SD		
Total HPLP	127.37	23.55	124.36	20.53	1.32	.43
Health Responsibility	22.96	3.91	20.77	3.90	1.00	.96
Physical Activity	14.33	5.04	15.18	4.78	1.11	.75
Nutrition	20.83	4.94	19.93	4.79	1.06	.84
Interpersonal Relations	26.17	4.64	24.39	4.33	1.15	.68
Spirituality *	25.42	6.34	25.16	4.30	2.17	.03
Stress Management	18.67	4.63	18.93	3.80	1.49	.26
Perceived Health Competence	24.83	5.51	26.36	4.07	1.83	.09
Barrier Scale	32.50	6.67	34.29	9.55	2.05	.07
Asthma Knowledge	13.50	1.35	12.59	1.69	1.56	.25

\* Significance at  $p < .05$

By Tukey analysis, participants who had graduate education reported practicing health-promoting behaviors more frequently than those with junior high and high school education (Table 10). These differences were significant on general health promotion ( $F=3.39$ ;  $p=.01$ ), health responsibility ( $F=3.85$ ;  $p < .01$ ), physical activity ( $F=2.69$ ;  $p=.03$ ), and spiritual growth ( $F=3.33$ ;  $p=.01$ ). There were, however, no significant differences among groups with respect to reported interpersonal relations, nutrition, and stress management. Those participants with graduate education reported experiencing barriers to health promotion less frequently than those with junior high and high school education; these differences, however, were non-significant. As well, there were no



Table 9. One-Way Analysis of Variance (ANOVA) by Site of Asthma Management

		Primary Care N=28		Asthma Clinic N=34		ER N=5	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
HPLP		126.64	20.14	124.29	23.37	126.20	22.09
HR		22.09	3.39	20.59	4.33	20.20	3.70
PA		15.43	5.47	14.56	4.61	14.80	3.27
Nutrition		20.50	4.72	19.97	4.91	19.80	5.89
Spirituality		25.36	4.99	24.97	5.38	26.60	4.50
IPR		24.28	4.22	25.41	4.80	26.40	4.45
SM		18.96	4.23	18.79	4.23	18.40	3.21
PHCS		25.86	5.25	25.47	4.51	27.80	1.30
BS		33.96	7.89	34.09	9.50	28.40	6.54
IQ		13.11	1.66	12.65	1.70	13.60	.55
Source	df	SS	MS	F	p		
HPLP	2	88.01	44.00	.09	.91		
	64	30932.29	483.32				
HR	2	40.76	20.38	1.32	.27		
	64	985.71	15.40				
PA	2	11.72	5.86	.24	.79		
	64	1552.04	24.25				
Nutrition	2	5.08	2.54	.10	.90		
	64	1534.77	23.98				
Spirituality	2	12.09	6.04	.23	.89		
	64	1708.60	26.70				
IPR	2	29.83	14.92	.72	.49		
	64	1321.15	20.64				
SM	2	1.47	.73	.04	.96		
	64	1113.72	17.40				
PHCS	2	23.78	11.89	.53	.59		
	64	1424.70	22.26				
BS	2	147.01	73.50	.97	.38		
	64	4832.90	75.51				
IQ	2	5.82	2.91	1.08	.34		
	64	171.64	2.68				
HR=Health Responsibility		PHCS=Perceived Health Competence					
PA=Physical Activity		BS=Barriers					
IPR=Interpersonal Relations		IQ=Asthma-related Knowledge					
SM=Stress Management							

Table 10. One-Way Analysis of Variance (ANOVA) by Education

Source	Grammar N=3			Junior High N=11			High School N=39			Some College N=8			College N=4			Graduate N=3		
	$\bar{X}$	SD		$\bar{X}$	SD		$\bar{X}$	SD		$\bar{X}$	SD		$\bar{X}$	SD		$\bar{X}$	SD	
HPLP	127.67	25.77		114.09 a	9.45		123.00 a	19.21		131.50	24.92		139.25	26.70		161.67 b	28.50	
HR	25.33	3.51		20.27	2.10		20.10	3.55		22.75	4.86		24.25	2.63		26.33	4.93	
PA	13.67	2.31		12.91 a	3.45		14.59 a	4.09		15.00	3.70		17.75	10.14		23.00 b	7.94	
Nutrit	19.67	6.11		18.82	3.06		20.15	4.78		19.62	5.18		23.25	5.91		25.00	7.21	
Spirit	24.33	8.33		22.09 a	3.78		24.95 a	4.72		27.37	5.01		27.25	3.40		33.33 b	3.03	
IPR	24.33	5.86		23.45	2.88		24.56	4.22		26.87	5.87		25.75	5.50		31.33	1.53	
SM	20.33	6.51		16.54	1.57		18.64	3.68		19.87	5.19		21.00	4.32		22.67	7.37	
PHCS	24.00	1.00		24.45	5.09		26.02	3.88		26.37	5.26		26.00	10.29		28.33	5.03	
BS	43.33	6.35		36.45	10.19		32.10	7.51		33.12	6.62		38.00	16.47		29.67	3.21	
IQ	12.33	.58		12.00	1.00		12.82	1.82		13.62	1.06		14.25	.96		14.33	1.15	
Source			df			SS				MS			F			p		
HPLP	Between groups		5	Between groups		66.57.64				1331.53			3.39			.01*		
	Within groups		62	Within groups		24362.99				392.95								
HR	Between groups		5	Between groups		243.16				48.63			3.85			<.01*		
	Within groups		62	Within groups		783.35				12.63								
PA	Between groups		5	Between groups		281.30				56.26			2.69			.03*		
	Within groups		62	Within groups		1297.76				20.93								
Nutrition	Between groups		5	Between groups		130.74				26.15			1.13			.35		
	Within groups		62	Within groups		1432.00				23.10								
Spirituality	Between groups		5	Between groups		363.98				72.80			3.33			.01*		
	Within groups		62	Within groups		1356.76				21.88								
IPR	Between groups		5	Between groups		185.71				37.14			1.98			.09		
	Within groups		62	Within groups		1165.27				18.79								
SM	Between groups		5	Between groups		137.31				27.46			1.74			.14		
	Within groups		62	Within groups		977.91				15.77								
PHCS	Between groups		5	Between groups		53.64				10.73			.48			.79		
	Within groups		62	Within groups		1396.24				22.52								
BS	Between groups		5	Between groups		586.69				117.34			1.65			.16		
	Within groups		62	Within groups		4404.52				71.04								
IQ	Between groups		5	Between groups		27.77				5.55			2.30			.05*		
	Within groups		62	Within groups		149.70				2.41								

\* P &lt; .05, a groups differ from b by Tukey's

HR=Health Responsibility PHCS=Perceived Health Competence

PA=Physical Activity BS=Barriers

IPR=Interpersonal Relations IQ=Asthma-related Knowledge

SM=Stress Management

significant differences among participants with various levels of education with respect to their perceived health competence and knowledge of their disease and its management.

### Summary

The purpose of this descriptive study was to: (1) to describe the health-promoting behaviors, the barriers to health promotion, knowledge of asthma, and perceived health competence of persons with chronic asthma, and (2) to examine the relationships among knowledge of asthma, health-promoting lifestyle, barriers to health promotion, perceived health competence (self-efficacy), and health promoting-behaviors and among gender, race, and site of asthma management. The purpose of this chapter was to report the findings of this study. The majority of participants were African-American females, with a mean age of 40.8, received their asthma management through the Asthma Clinic, and had some high school education or were high school graduates.

Asthmatic patients in this study reported engaging in behaviors aimed at enhancing spiritual growth, interpersonal relations, and health responsibility more frequently than they engaged in behaviors reflecting engagement in physical exercise, stress management, and nutrition. The only statistically significant differences in health promotional behaviors were noted between Caucasians and non-Caucasians in the spiritual growth subscale. Caucasians reported behaviors reflecting greater spiritual growth than non-Caucasians.

Individuals perceived some control over their health status and those subjects who reported higher perceptions of perceived health competence were more likely to

participate in health-promotional behaviors related to physical exercise, interpersonal relations, spiritual growth, and stress management. However, individuals were more likely to feel less competent to handle their health as barriers to health promotion increased. And as age increased, individuals perceived more barriers to health promotion. Participants with a graduate education tended to practice more health-promotional behaviors related to general promotion, physical exercise, and spiritual growth and scored lowest on the barriers scale, indicating that individuals with a higher education perceived less barriers to health promotion. As asthma-related knowledge increased so did health promotional behaviors related to health responsibility, physical exercise, interpersonal relations, spiritual growth, and perceived health competence. No significant differences exist between gender and site of asthma management in relationship to the total HPLP and all subscales, perceived health competence, barriers to health promotion, and asthma knowledge. The findings of this study, which are reported in this chapter, show few significant differences related to gender, race, and site of asthma management. The reported findings and their implications are discussed in chapter 5.

## CHAPTER 5

### SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The morbidity and mortality associated with poor health behaviors make the study of variables associated with health promotion behaviors important. The purpose of this descriptive study was two-fold: (1) to describe the health-promoting behaviors, the barriers to health promotion, knowledge of asthma, and perceived health competence (self-efficacy) of persons with chronic asthma, and (2) to examine the relationships among knowledge of asthma, health-promoting lifestyle, barriers to health promotion, perceived health competence (self-efficacy), and health promoting behaviors and among gender, race, and asthma management site.

The theoretical framework for this study was based on Pender's Health Promotion Model (Pender, 1996). This model proposes that the determinants of health-promoting behavior be categorized into cognitive-perceptual factors, modifying factors, and variables affecting the likelihood of action. While cognitive-perceptual factors are the primary motivational mechanisms for acquiring and maintaining health-promoting behaviors, the modifying factors in turn affect the cognitive-perceptual factors, which then influence health-promoting behaviors.

A convenience sample ( $N=68$ ) of asthma patients who were seen in three different sites of care was used. Of the 75 patients approached to participate, 90.6% agreed to complete the questionnaires. Data were analyzed using descriptive statistics,  $t$ -tests, Pearson's correlations, and one-way analysis of variance (ANOVA). The sample consisted of 20 (29.4%) males and 48 (70.6%) females that were between 21 and 69 years of age. The mean age of the participants was 40.8 (range = 21- 69 years). The mean age at time of diagnosis of asthma was 22.6. The sample comprised of 42 (61.8%) African-Americans and 20 (29.4%) Caucasians. A total of 35 (51.5%) subjects received care through the Asthma Clinic, while 27 (39.7%) received care in the Primary Care Clinic. Of the 68 subjects, only six (8.8%) used the emergency room as their primary access to health care. Educational level of the sample reflects that more than half (57.4%) of the subjects had some high school or had graduated from high school. Of the 68 subjects, 63 (92.5%) were on some form of prescribed inhaled corticosteroid and over 77% of the sample were classified as having moderate persistent asthma.

#### Health-Promoting Lifestyle

Participation in health promotional behaviors has been reported to be affected by gender (Lusk et al., 1993; Pender et al., 1990; Speake et al., 1989; Waller et al., 1988; Weitzel, 1989) and ethnicity (Sander-Phillips, 1996; Speake et al, 1989; Weitzel & Waller, 1990). Despite small differences or trends between males and females in different health promotional behaviors, in this study gender was not found to be a statistically significant variable ( $p < .05$ ) (Table 7). Because the majority of participants

in this study were African-American, female, and divorced, this may explain why fewer health promotional behaviors were practiced.

In this study, females reported engaging in fewer health promotional behaviors than males on the subscales of health responsibility, physical activity, nutrition, spirituality and stress management, but reported experiencing better interpersonal relations. This suggests that women in this sample have lower levels of commitment to and involvement with development of a healthy life style. Sander-Phillips (1996) noted that women, especially African-American women are less likely to engage in health promotion behaviors than other groups of women and low income black women tend to engage in fewer health promotion behaviors.

The literature suggests that barriers to health promotion have important implications for engaging in health-promoting behaviors (Stuifbergen et al., 1990). In this study, non-Caucasians reported experiencing more barriers to health promotion than Caucasians. The more frequent the barriers encountered by individuals the less likely they are to practice health promotional behaviors such as exercise. One such barrier most often cited in this study was lack of money and because women typically earn less than men financial issues may be perceived as a barrier to health promotion (Pinto et al., 1996). This may account for the fewer health promotional behaviors practiced by females than males in this study. Because participants lacked the financial means, many may have had no desire, energy, or time neither to attend health educational programs nor to engage in some of the healthy behaviors which the HPLP measures. Furthermore,

women act as the primary care providers for their family and because of this, they may have little time to engage in health promoting behaviors such as preparation of healthy nutritious meals or exercise (Pinto et al., 1996; Volden et al., 1990). Therefore, leisure time may be decreased due to family and work obligations. In addition, despite legislation prohibiting gender discrimination in our school system, women have encountered a less than supportive environment for physical activity. During adolescence there is a reduction in physical activity among females, which may extend through adulthood (Pinto et al., 1996). Another possible explanation for decreased participation in physical activity may be due to safety issues, which is another barrier to health promotion cited by participants in this study. Booth et al. (1991) and Kuster and Fong (1993) also reported that females reported less physical activity behaviors than males.

It is not surprising that females in this study report greater interpersonal relationships. Lusk et al. (1993), Volden et al. (1990) and Weitzel (1989) noted that females reported better interpersonal relations. Interpersonal relationships, particularly those within the family unit, are a critical part of the African-American culture and are considered one of the strengths of the African-American family (Hughes, Lerman, & Lustbader, 1996). Another possible suggestion as to why women reported greater interpersonal relationships is that there has long since been sex role socialization which encourages strong interpersonal ties among women rather than men early in life, which may persist into adulthood (Duffy, 1993). In addition, it has also been suggested that men report lower interpersonal relations because their involvement in community



organizations and recreational activities helps them meet their need for interpersonal support (Volden et al., 1990).

Females in this study perceived that they were less capable than males of performing behaviors needed to generate specific outcomes, in this case participating in more health promotional behaviors. How individuals perceive their health status may influence the type of health promoting activities they choose. As perception of good health increases, or their ability to feel capable of performing specific behaviors, individuals are more likely to act in ways to achieve and maintain a healthy lifestyle. Duffy (1990), Riffle et al. (1990), and Speake et al. (1991) noted that the greater the perception of present health, the higher the scores on the subscales of spirituality, nutrition, interpersonal support, and exercise, while Neuberger et al. (1994) and Pender et al. (1990) found that the poorer perceived health status, the lower the exercise subscore on the Health-Promoting Lifestyle Profile.

The findings in this study are similar to findings by Frauman and Nettle-Carlson (1991) and Speake et al. (1989) in which gender was not significantly associated with the mean total scores or subscale scores of the HPLP-II. The results in this study, however, are unlike other studies in which women reported higher health-promoting behaviors than males on the overall health promoting lifestyle profile and subscales of health responsibility, physical activity, nutrition, (Lusk et al., 1993; Pender et al., 1990; Speake et al., 1989; Volden et al., 1990; Waller et al., 1988; Weitzel, 1989). The relatively homogeneous nature of this sample may explain why no differences exist.

Although the differences were not statistically significant, in this study Caucasians scored higher on the total HPLP, health responsibility, nutrition, and interpersonal support, while non-Caucasians report being more physically active and recognize and cope better with stress. The only significant difference between Caucasians and non-Caucasians was in the spiritual growth subscale. Caucasians reported behaviors reflecting greater spiritual growth than did non-Caucasians, which was an unexpected finding. Most non-Caucasians have a strong religious commitment. However, the items reflecting spiritual growth focus on a sense of fulfillment, purpose in life, and self-awareness and not on religious aspects (Duffy & MacDonald, 1990; Lusk et al., 1995). One of the strengths of the African-American family is their strong family commitment and it has been suggested that individuals who have a strong commitment and concern of others could logically be expected to hold a lower degree of concern for themselves and thus perform fewer behaviors directed toward health promotion (Hughes, Lerman, & Lustbader, 1996; Weitzel & Waller, 1988; Weitzel et al., 1994). However, since there was wide variability ( $SD=6.34$  vs.  $SD=4.30$ ) between Caucasians and non-Caucasians on the spiritual growth subscale, this finding may be an artifact.

Results of the present study, which found that non-Caucasians employed health-promoting behaviors less frequently than Caucasians, support the findings of Sander-Phillips (1996) who reported that African-Americans engaged in fewer of the health promoting behaviors known to be related to morbidity and mortality. Again the more frequently encountered barriers to health promotion reported by non-Caucasians may

explain why non-Caucasians practice fewer health promotional behaviors. Also, African-Americans tend to be more concerned with treatment of an illness, seeking care when they are ill, as opposed to prevention or promotion (Robinson & Hayes, 1996). In addition, African-Americans are often perceived as disadvantaged in terms of health awareness and practices, experiencing poorer health as result of racism, prejudice, discrimination, economic status, and lack of access to health care (Lusk et al., 1993).

The findings in this study are similar to the results reported by Duffy (1988), Frauman and Nettles-Carlson (1991), Fleetwood and Packa (1991), Lusk et al. (1995), Speake et al. (1989) and Weitzel (1994) who also found that although there were some differences in health promotional behaviors among Caucasians and non-Caucasians, with Caucasians tending to score higher on most subscales of the health-promoting lifestyle profile, analyses did not support large differences in health behaviors among Caucasians and non-Caucasians. Ethnicity had no effect on any of the dimensions of health promotion. Weitzel and Waller (1990), however, found that although Caucasians reported higher performance of behaviors in promoting spiritual growth than Hispanics, there were no differences among Caucasians and African-Americans.

Most of the studies of health promotion have involved Caucasian groups. Since the HPLP has a middle-class bias (Ahijevych & Bernhard, 1992), it may not have been appropriate for the majority of patients in this study. Although in this study income was not studied as a variable affecting health promotion, it has been indicated as a predictor affecting health-promoting behaviors in a number of other studies (Duffy, 1988, 1993;

Frauman & Nettles-Carlson, 1991; Kuster & Fong, 1993; Pender et al., 1990; Riffle et al., 1990; Weitzel & Waller, 1990). In these studies income correlated significantly and positively with scores on the HPLP, such that the higher the income, the higher the scores on the HPLP. Individuals with higher incomes are more likely to feel in control of their health and participate in healthy behaviors. Since the participants in this study were indigent, the HPLP-II may not have been the most appropriate instrument to measure health-promoting behaviors. It is possible that because the urban area in which this study was completed has a higher distribution of non-Caucasians there is a decreased perception of availability of access to health care.

In this study age was positively correlated with health responsibility, nutrition, interpersonal relations, stress management, and asthma knowledge, thus indicating that as individuals aged, they were more responsible for their health, engaged in healthier eating patterns, had better interpersonal relations, coped better with stress, and had a higher knowledge regarding their asthma. In contrast, however, as individual age their participation in physical exercise, spiritual growth, and feelings of ability to effectively manage their health decreased. As individuals age, they may experience more chronic illnesses and as a result may perceive they are incapable of managing their health. Therefore, they may practice fewer health promotional activities related to physical activity. However, as a result of these medical conditions and in order to prolong life, older individuals may choose to change their behaviors related to health promotion, such as becoming more responsible for their health, eating healthier foods, or increasing their

physical activity. Additionally, they may now have more time to participate in more health promotional behaviors, such as becoming more involved in community and family activities and may not have the stress related to job pressures. The findings in this study are similar to those reported by Frauman and Nettles-Carlson (1991) who found no significant association between age and mean total scores on the health-promoting lifestyle profile. However, unlike Ail and Bennett (1992), Kuster and Fong (1993), Volden et al. (1990), Waller et al. (1988), and Walker et al. (1987), who found that adults and older adults engaged in health-promoting behaviors, age was not significantly correlated with health-promoting behaviors in this study. Volden (1990) reported that age was a significant variable with gradual increase in nutrition and health responsibility as one aged and decreases in exercise for each decade except for 55 to 64 age group. Although not significant in this study, the results support the findings by Riffle et al (1990) in which they reported that older participants reported fewer health promotional behaviors related to exercise. Older participants may perceive that they are more limited due to their age or have health related conditions which prevent them from exercising.

With the exception of the barriers to health promotion, individuals who had a graduate educational level had the highest mean on all variables of health promotion, perceived health competence, and asthma-related knowledge. These results support findings of other studies which reported that the higher the education the better the overall health-promoting behaviors (Ali & Bennett, 1992; Frauman & Nettles-Carlson 1991; Kuster & Fong, 1993; Lusk et al., 1995; Riffle et al., 1990; Speake et al., 1989;

Waller et al., 1988; Weitzel, 1989). This suggests that the better educated people are, the more likely they are to assume responsibility for their health and practice more health-promoting behaviors. The higher the educational level, the greater the knowledge one has regarding health promoting behaviors. Therefore it is important to evaluate patients educational background and previous knowledge base, because as knowledge increases, the practice of preventive behaviors tends to be more frequent. It is well established that knowledge, beliefs, values, and behaviors have an impact on the well-being, morbidity, and mortality of the population (Fleetwood & Packa, 1991). This does not support the studies reported by Duffy (1988), Epstein and Pyoala (1987) and Pender et al. (1990) which found no significant association between education and health-promoting lifestyle.

#### Perceived Health Competence

Males, non-Caucasians, subjects with a graduate education and those receiving care in the Emergency Department perceived they were better prepared to manage their health; however they experienced more barriers to health promotion than females and Caucasians. These differences, however, were not statistically significant. When individuals have increased feelings of competence or control over their health, they are more likely to practice health promotion behaviors, which is the primary finding in this study. This supports other studies reporting that perceptions of health status and perceived health competence were powerful predictors of health-promoting behaviors (Kuster & Fong, 1993; Waller et al., 1988; Weitzel, 1989). Even though non-Caucasians reported feelings of more control over their health, they practiced fewer health

promotional behaviors. Although non-Caucasians perceived they were more capable of managing their health outcomes, the more frequently reported barriers to health promotion reported by non-Caucasians may explain why they practiced fewer health behaviors. This study does not support the findings by Speake et al. (1989) who reported stronger perceptions of health competence among Caucasians.

Bandura (1982) states that beliefs of personal efficacy can determine whether or not behaviors will be performed. Individuals' confidence in performing activities that will favorably affect a situation is a central component to Bandura's theory and is a precursor to behavior change. It incorporates the social origins of thought, action, motivation, and affect (Froman, 1997). Health competence or self-efficacy has been demonstrated to be a useful construct for predicting preventive health behavior. The relationship between behavior and self-efficacy is a reciprocal one (Smith et al., 1995). As one's feeling of self-efficacy or competency increase, one is more apt to make behavioral changes. Individuals with a strong sense of self-efficacy have been found to exert a greater effort to master their problems and take control over their lives, including health promotion (Waller et al., 1988). For instance, when individuals feel good about losing weight, their feelings of control increase and they are more likely to continue to maintain a physical exercise program. Past successful experiences strengthens one's sense of efficacy, which in turn may contribute to a greater effort in achieving goals in the future (Smith et al., 1995). Pender's health promotion model supports this notion that individual perceptions of health influence health promotion behavior (Pender, 1996).

### Barriers to Health Promoting Behavior

As ability to manage health outcomes improved, so did responsibility for health. Barriers to health promotion and asthma-related knowledge had a positive correlation with health responsibility, nutrition, and stress management, thus indicating that as barriers to health promotion increased so did the subjects responsibility for their health, improved nutrition, and coping strategies related to stress management.

The most frequently cited barriers were lack of money, too tired, bad weather, and concern about safety. These findings are similar to findings by Jones (1996), Northam (1996), and Stuifbergen et al. (1990). The more frequently individuals in this study experience barriers to health promotion, the less likely they are to participate in health promoting behaviors and the less likely they felt capable of effectively managing their health. A possible explanation for the fewer health promoting behaviors practiced by asthma patients is the increased number of barriers to health promotion and the less reported feelings of perceived control over their health. Thus, these individuals are more likely not to participate in health promotional behaviors. The increased number of barriers to health promotion noted by non-Caucasians in this study is similar to the findings reported by Stuifbergen et al. (1990) in which being African-American was associated with greater perceived barriers. Non-Caucasians are often perceived as disadvantaged in terms of health awareness and practices (Lusk et al., 1995). It has been reported that ethnicity can act as a barrier (Melnik, 1988). It is also known that those who are indigent have less accessibility to the health care system and because of this,



may not receive the education needed to allow them to make the choice of practicing health-promoting behaviors. The mere fact that this was primarily an indigent population, with a higher percentage of non-Caucasians, may explain why these participants felt they had less access to care; hence, when seeking care they encounter more barriers to health promotion.

Age was significantly correlated with barriers to health promotion, such that older participants experienced more barriers. Volden et al. (1990) reported that as one aged participation in physical exercise decreased. These findings are similar to those in the present study, which found age to be negatively correlated with physical exercise. However, as participants aged they were more likely to be concerned with the health-promotional behaviors of health responsibility, nutrition, interpersonal relations, stress management, and asthma knowledge. This reinforces the conclusions that typecasting older individuals as inactive in the area of health promotion is inaccurate.

Participants with a graduate education scored lowest on the barriers scale, indicating that individuals with a higher education perceived that they experienced barriers less frequently than less educated participants. One reason for this is that those with higher educational levels have the means to seek care and know the value of health promoting behavior, thus gaining the benefits that providers can contribute in the form of education regarding health promotional behaviors. Also, having a higher education may force one to seek educational material on how to help themselves. Duffy (1988), Lusk et al. (1995), Riffle et al. (1990), Speake et al (1989) reported similar findings in their

studies. Education consistently predicted that individuals practiced more health promotional behaviors related to health responsibility, nutrition, interpersonal relations, spirituality, and stress management. Therefore, understanding a patient's educational level and practice of health-promoting behaviors is important in initiating health promotion programs.

#### Asthma-related Knowledge

Although no significant differences in knowledge were found between gender, race, or site of asthma care, males, Caucasians and subjects seen in the Primary Care Clinic tended to answer a higher percentage of the questions on the Asthma "IQ" test correctly. One possible explanation for this is that there may have been a higher number of males with a higher educational level, making it easier to understand written and printed educational information. Another explanation may be related to the number of visits the participants made to their provider. The Asthma Clinic has been operating for approximately one year. Therefore, the participants seen in this clinic may have visited their provider a limited number of times, whereas those seen in the Primary Care Clinic may have been attending for a longer period, taking advantage of the education and reinforcements regarding disease process and management provided by the provider over a longer period of time.

Using knowledge appraisal instruments in health promotion assists health care providers in evaluating patients' knowledge of asthma by identifying areas in which more information is needed. The Asthma "IQ" test is a good tool to use as a baseline measure

of a patient's knowledge of asthma. It should be utilized more as an educational tool to provide asthma education.

In summary, although a number of trends were noted in this study, there was not a significant difference between males and females, Caucasians and non-Caucasians, and site of asthma management. This study partially supports Pender's Health Promotion Model (Pender, 1996). There were significant relationships between the modifying factors of age and education on health-promotional behaviors, perceived health competence, barriers to health promotion and asthma-related knowledge. In analysis of the majority of the reported studies, the cognitive-behavioral specific behaviors of perceived self-efficacy and barriers have been supported as predictors of health behaviors. Therefore because the modifying factors are not amendable to change, focus must be placed on changing the cognitive-perceptual factors, such as increasing one's perception of self-efficacy and decreasing the number of perceived barriers to health promotion.

#### Limitations

Because this was a correlational descriptive study with a nonrandom sample, the findings should be interpreted cautiously. Generalization to populations other than asthma patients should be done with caution.

#### Implications and Recommendations

Each year more than 5000 people die of asthma, with the highest rate among blacks aged 15 to 24 (Centers for Disease Control and Prevention, 1996; National

Asthma Education and Prevention Program, 1997). The overall mortality rates among African-Americans are approximately 50% higher than Caucasians and are the highest of the minority groups. The higher rates of morbidity and mortality among minority Americans emphasize the need for effective disease preventing and health-promoting strategies to influence health-behavior change. However, current knowledge of cultural norms for health-related beliefs and behavior patterns in minority populations is limited. Most of the research has been on the differences among ethnic groups in health-protecting behaviors and not on health-promoting behaviors, which are behaviors that enhance the level of health and well-being (Pender, 1996; Weitzel et al., 1994). Because significant differences were noted in only one subscale of the HPLP (spirituality), these analyses do not support large differences in health behaviors between different races. One should be aware of the effects of potential differences in health beliefs and behaviors among minorities (Weitzel et al., 1994).

The relative lack of differences in health promotional behaviors among patients with asthma in this study may be due to the homogenous nature of the group. It has been suggested that the HPLP scale is not a good measure to use with ethnic groups, and this sample was comprised of 68.8 % African-Americans. The inability to predict African-Americans' health-promoting behaviors based on the health promotion model indicates that the model may be inadequate to describe the behaviors for these minority groups. Further testing with ethnic minorities is needed as a precursor to further development of the health promotion model. On the other hand, the use of or development of other

models that may better account for these groups' behavior may be necessary. For example, variables that might better describe the behaviors of African-Americans may need to be added to the model, or different models may need to be developed for African-Americans (Weitzel & Waller, 1990).

This study adds to the body of scientific knowledge on health promotional behaviors and, since no data is available for asthma patients this study provides important data about health promotional behaviors of patients with asthma. When examined within the context of the Health Promotion Model (Pender, 1996), these findings have implications for the advanced practice of nursing. Nurses at all levels must consider the attitudes and values of their clients when developing interventions. Only by making a complete assessment of each individual can changes begin to occur. Interventions must take into consideration the cognitive/perceptual factors of importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, perceived benefits of health-promoting behaviors, perceived barriers to health-promoting behaviors, clients' perceptions and current health-promoting practices, age, educational background, and ethnic makeup. Although patients have the responsibility to make changes in their behaviors, advanced practice nurses can assist in this process by providing the necessary tools, offering support, and encouraging self-efficacy. Movement toward healthy behaviors is a partnership between the nurse and the patient, each sharing the responsibility to bring about the change. Nurses should provide the knowledge, the skills for bringing about change, and the persistence and cues to promote

positive action by the patient. In addition, the patient must demonstrate the interest, willingness, and motivation for change (Alto, 1995).

Continued investigation on health promotional behaviors, perceived health competence, and barriers to health promotion among patients with asthma is recommended. Specifically studies focusing on different ethnic groups and the variables of perceived health competence and barriers to health promotion will be important. In addition, education should be an ongoing process at all levels and with all populations. Information needs to be provided in the appropriate environment and manner for the population served, being cognizant of the educational, psychosocial, economic, and cultural factors that influence the attitudes, beliefs, and decision-making abilities of all patients. By educating patients, nurses can help direct the patient's decision to make health-promotional lifestyle changes. This study should be replicated in a larger population and with groups consisting of different ethnic backgrounds, and among both the indigent and insured population.

### Conclusions

Findings from this research can be generalized only to the subjects studied and samples with similar profiles. The major conclusions from this study are:

1. The health promotional behaviors most often practiced by patients with asthma are spirituality, interpersonal relations, and health responsibility. The behaviors practiced least often are physical activity, stress management, and nutrition.

2. The only statistically significant difference in race was found on the subscale variable of spirituality.

3. Patients with asthma reported feeling capable of effectively controlling their health outcomes.

4. The barriers to health promotion most often cited by patients with asthma are lack of money, too tired, bad weather, and concern about safety. The most infrequent barriers were difficulty with communication, impairment, and lack of help from health care professionals. Participants having a graduate education perceived that they experienced barriers less frequently than less educated participants.

5. There were both positive and negative, but weak significant correlations among the variables of perceived health competence, barriers to health promotion, asthma knowledge, and age. Perceived health competence was found to be significant positively, but weakly correlated with physical exercise, interpersonal relations, spiritual growth, and stress management. Barriers to health promotion had a negative but significant correlation with perceived health competence. In other words, as barriers to health promotion increased individuals' feelings of perceived health competence or control over their health decreased, thus indicating they felt less competent in managing their health. Asthma-related knowledge had a weak positive significant correlation with health responsibility, physical exercise, interpersonal relations, spiritual growth, and perceived health competence. Age was significant positively correlated with barriers to health promotion.

6. Analysis does not support significant differences in health promotional behaviors, perceived health competence, barriers to health promotion, and asthma-related knowledge between males and females and sites of asthma management.

7. The greater the educational level, the more frequently reported health promoting behaviors practiced.

### Summary

This study examined the health-promotional lifestyle, perceived health competence, and barriers to health promotion in persons with chronic asthma. When compared to the average, the subjects in this study practiced less health-promoting behaviors, but had higher feelings of perceived health competence. The most frequent barriers to health promotion were cited. No significant differences except in the subscale of spirituality existed between gender, race, and site of asthma care. Implications and recommendations for further research are presented.



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## APPENDICES

## APPENDIX A

## Consent Form

Health-Promoting Practices, Perceived Competence, Barriers to Health  
Promotion, and Asthma-related Knowledge in Persons  
with Chronic Asthma

You are invited to participate in a study to describe the health-promoting practices, perceived competence, and barriers to health promotion in chronic asthmatic patients. This study is being completed by Laura A. Bass RN, a graduate student in nursing at the Medical College of Virginia, Virginia Commonwealth University, School of Nursing. It is being conducted under the guidance of Jeanne Salyer, Ph.D., RN, faculty advisor. If you agree to participate, you will be asked to complete four questionnaires. It will take approximately 15 to 20 minutes for you to complete the questionnaires. In addition, you will be asked to provide some information about yourself.

You will derive no personal benefits from this study; however, your participation may benefit others by helping us to understand the health-promotion aspects and barriers to health promotion that the chronic asthmatic patient encounters. This is not a therapeutic study. You have the alternative not to participate. If you choose not to participate, you can still continue to receive care for your asthma.

There are no risks or discomforts associated with your participation in this study. Inconveniences associated with participating in the study include waiting time in the clinic or Emergency Department prior to seeing the doctor and the time it takes to complete the questionnaires.

Initials: \_\_\_\_\_

Costs to you of participating in this study include the loss of your personal time/time off of work and transportation to/from the clinic or Emergency Department. You will not be paid for your participation.

The investigator and her advisor (Ms. Bass or Dr. Salyer) who conduct the study and review the questionnaires will treat your identity with professional standards of confidentiality. The information obtained in this study may be published, but your identity will not be revealed.

Participation in this study is voluntary. The investigators will answer any questions you may have about the study. You are free to withdraw your consent and discontinue participation at any time. If you decide to withdraw from this study, you should contact Ms. Bass. Discontinuation will in no way affect the care you receive now or in the future at this institution.

The investigator and her advisor can be reached at the following telephone numbers: Laura Bass: (804) 965-5539 from 8:30 am-5:00 p.m. Monday-Friday and Jeanne Salyer (advisor): (804) 828-3373 from 8:30 am-5:00 p.m. Monday-Friday

Completion and return of the questionnaires constitute your consent to participate in this study. You will be provided a copy of this consent form. If you have any questions concerning your rights as a research subject, you may contact the Committee on the Conduct of Human Research at (804) 828-0868 for information or assistance.

Initials: \_\_\_\_\_

**APPENDIX B**

### Demographic Data

To enable me to compare the results of this study with people from different groups and situations, I would like some additional information about your background. Please complete the following items.

1. AGE \_\_\_\_\_

2. SEX \_\_\_\_\_ 1. Male  
 \_\_\_\_\_ 2. Female

3. MARITAL STATUS

\_\_\_\_\_ 1. Single, never married  
 \_\_\_\_\_ 2. Married  
 \_\_\_\_\_ 3. Divorced or separated  
 \_\_\_\_\_ 4. Widowed

4. EDUCATIONAL LEVEL

What is the highest grade of regular school that you have completed? (Circle one)

<u>Grade School</u>	<u>High School</u>	<u>College</u>	<u>Graduate School</u>
1 2 3 4 5 6 7 8	9 10 11 12	13 14 15 16	17 18

Doctoral Degree

19 20 21

5. ETHNIC BACKGROUND

\_\_\_\_\_ 1. Asian  
 \_\_\_\_\_ 2. African-American  
 \_\_\_\_\_ 3. Caucasian  
 \_\_\_\_\_ 4. Hispanic  
 \_\_\_\_\_ 5. Native American  
 \_\_\_\_\_ 6. Other (Specify) \_\_\_\_\_

6. HOW OLD WERE YOU WHEN YOU WERE DIAGNOSED WITH ASTHMA?

\_\_\_\_\_ years old

7. HAVE YOU VISITED AN EMERGENCY DEPARTMENT IN THE LAST YEAR FOR AN ASTHMA ATTACK? IF YES, WHEN?

\_\_\_\_\_ 1. No  
 \_\_\_\_\_ 2. Yes DATE: \_\_\_\_\_

8. CIRCLE THE MEDICATIONS YOU ARE CURRENTLY TAKING FOR YOUR ASTHMA. ALSO LIST HOW MUCH AND HOW OFTEN YOU ARE TAKING THEM. IF YOU ARE TAKING ANY OTHERS THAT ARE NOT LISTED PLEASE WRITE THEM IN THE AREA LISTED AS OTHER.

**Corticosteroids (Glucocorticoids)**

Flovent (44, 110, 220) \_\_\_\_\_ puffs \_\_\_\_\_ times a day

Azmacort \_\_\_\_\_ puffs \_\_\_\_\_ times a day

**Severity of disease:**

Mild Intermittent \_\_\_\_\_

Mild Persistent \_\_\_\_\_

Moderate Persistent \_\_\_\_\_

Severe Persistent \_\_\_\_\_

**Long-Acting Beta2-Agonists**

Serevent (Salmeterol) \_\_\_\_\_ puffs \_\_\_\_\_ times a day

Albuterol (Sustained Release) \_\_\_\_\_ mg \_\_\_\_\_ times a day

**Short-Acting Beta2-Agonists**

Albuterol/Ventolin/Proventil \_\_\_\_\_ puffs \_\_\_\_\_ times a day

Atrovent \_\_\_\_\_ puffs \_\_\_\_\_ times a day

**Leukotriene Modifiers**

Accolate \_\_\_\_\_ mg \_\_\_\_\_ times a day

**Methylxanthines**

Theophylline \_\_\_\_\_ mg \_\_\_\_\_ times a day

OTHER:

9. ARE YOU CURRENTLY TAKING ORAL STEROIDS (PREDNISONE) ON A DAILY BASIS FOR YOUR ASTHMA?

\_\_\_\_\_ 1. No

\_\_\_\_\_ 2. Yes

10. ARE YOU CURRENTLY TAKING ANY ANTIBIOTICS?

\_\_\_\_\_ 1. No

\_\_\_\_\_ 2. Yes

11. WHERE DO YOU NORMALLY RECEIVE YOUR ASTHMA CARE?

\_\_\_\_\_ 1. Primary Care Clinic

\_\_\_\_\_ 2. Asthma Clinic

\_\_\_\_\_ 3. Emergency Department

\_\_\_\_\_ 4. Other: \_\_\_\_\_

## APPENDIX C



### LIFESTYLE PROFILE II

**DIRECTIONS:** This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

N for never, S for sometimes, O for often, or R for routinely

	Never	Sometimes	Often	Routinely
1. Discuss my problems and concerns with people close to me	N	S	O	R
2. Choose a diet low in fat, saturated fats, and cholesterol	N	S	O	R
3. Report any unusual signs or symptoms to a physician or other health professional	N	S	O	R
4. Follow a planned exercise program	N	S	O	R
5. Get enough sleep	N	S	O	R
6. Feel I am growing and changing in positive ways	N	S	O	R
7. Praise other people easily for their achievements	N	S	O	R
8. Limit use of sugars and food containing sugar (sweets)	N	S	O	R
9. Read or watch TV programs about improving health	N	S	O	R
10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber)	N	S	O	R
11. Take some time for relaxation each day	N	S	O	R
12. Believe that my life has purpose	N	S	O	R
13. Maintain meaningful and fulfilling relationships with others	N	S	O	R
14. Eat 6-11 servings of bread, cereal, rice and pasta each day	N	S	O	R
15. Question health professionals in order to understand their instructions	N	S	O	R
16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week)	N	S	O	R
17. Accept those things in my life which I can not change	N	S	O	R
18. Look forward to the future	N	S	O	R
19. Spend time with close friends	N	S	O	R
20. Eat 2-4 servings of fruit each day	N	S	O	R
21. Get a second opinion when I question my health care provider's advice	N	S	O	R
22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling)	N	S	O	R
23. Concentrate on pleasant thoughts at bedtime	N	S	O	R

24. Feel content and at peace with myself	N	S	O	R
25. Find it easy to show concern, love and warmth to others	N	S	O	R
26. Eat 3-5 servings of vegetables each day	N	S	O	R
27. Discuss my health concerns with health professionals	N	S	O	R
28. Do stretching exercises at least 3 times per week	N	S	O	R
29. Use specific methods to control my stress	N	S	O	R
30. Work toward long-term goals in my life	N	S	O	R
31. Touch and am touched by people I care about	N	S	O	R
32. Eat 2-3 servings of milk, yogurt or cheese each day	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking)	N	S	O	R
35. Balance time between work and play	N	S	O	R
36. Find each day interesting and challenging	N	S	O	R
37. Find ways to meet my needs for intimacy	N	S	O	R
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day	N	S	O	R
39. Ask for information from health professionals about how to take good care of myself	N	S	O	R
40. Check my pulse rate when exercising	N	S	O	R
41. Practice relaxation or meditation for 15-20 minutes daily	N	S	O	R
42. Am aware of what is important to me in life	N	S	O	R
43. Get support from a network of caring people	N	S	O	R
44. Read labels to identify nutrients, fats, and sodium content in packaged food	N	S	O	R
45. Attend educational programs on personal health care	N	S	O	R
46. Reach my target heart rate when exercising	N	S	O	R
47. Pace myself to prevent tiredness	N	S	O	R
48. Feel connected with some force greater than myself	N	S	O	R
49. Settle conflicts with others through discussion and compromise	N	S	O	R
50. Eat breakfast	N	S	O	R
51. Seek guidance or counseling when necessary	N	S	O	R
52. Expose myself to new experiences and challenges	N	S	O	R

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## APPENDIX D

### PERCEIVED HEALTH COMPETENCE SCALE

Please answer the following eight questions by circling the statement which you feel describes how you feel. Thank-you.

**1. I handle myself well with respect to my health.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

**2. No matter how hard I try, my health just doesn't turn out the way I would like.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

**3. It is difficult for me to find effective solutions to the health problems that come my way.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

**4. I succeed in the projects I undertake to improve my health.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

**5. I'm generally able to accomplish my goals with respect to my health.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

**6. I find my efforts to change things I don't like about my health are ineffective.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

**7. Typically, my plans for my health don't work out well.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

**8. I am able to do things for my health as well as most other people.**

STRONGLY AGREE    AGREE    UNCERTAIN    DISAGREE    STRONGLY DISAGREE

(Smith et al., 1995)

**APPENDIX E**

## BARRIERS SCALE

People sometimes have problems doing what they want to do to stay healthy. Please circle the number which best indicates how much each of these problems keeps you from taking care of your health.

	1 = NEVER	2 = SOMETIMES	3 = OFTEN	4 = ROUTINELY
1. Lack of convenient facilities..	1	2	3	4
2. Too tired.....	1	2	3	4
3. Lack of transportation.....	1	2	3	4
4. Feeling what I do doesn't help.....	1	2	3	4
5. Lack of money.....	1	2	3	4
6. Impairment.....	1	2	3	4
7. No one to help me.....	1	2	3	4
8. Not interested.....	1	2	3	4
9. Lack of information about what to do.....	1	2	3	4
10. Embarrassment about my appearance.....	1	2	3	4
11. Concern about safety.....	1	2	3	4
12. Lack of support from family/friends.....	1	2	3	4
13. Interferes with other responsibilities.....	1	2	3	4
14. Lack of time.....	1	2	3	4
15. Feeling I can't do things correctly.....	1	2	3	4
16. Difficulty with communication.....	1	2	3	4
17. Bad weather.....	1	2	3	4
18. Lack of help from health care professionals.....	1	2	3	4

Other reasons: \_\_\_\_\_

(Stuifbergen & Becker, 1990)

## APPENDIX F

### ASTHMA KNOWLEDGE

Instructions: Please read each question carefully. Circle either "true" or "false" for each statement.

- |   |      |       |
|---|------|-------|
| 1. Asthma is an emotional or psychological illness.   | TRUE | FALSE |
| 2. People with asthma should exercise regularly.  | TRUE | FALSE |
| 3. Smoke from cigarettes, cigars, and pipes can bring on an asthma attack.  | TRUE | FALSE |
| 4. If asthma attacks are brought on by exercise, medicines can be taken before exercising to help avoid an attack.                    | TRUE | FALSE |
| 5. Asthma episodes usually occur suddenly without warning.  | TRUE | FALSE |
| 6. People with asthma have sensitive lungs that react to certain things, causing the airways to tighten, swell, and fill with mucous. | TRUE | FALSE |
| 7. People with asthma can monitor how well their lungs are functioning with a peak flow meter.  | TRUE | FALSE |
| 8. There are medicines that can be prescribed to prevent asthma attacks.  | TRUE | FALSE |
| 9. Asthma cannot be cured but it can be controlled.   | TRUE | FALSE |
| 10. Early symptoms of an asthma attack can be recognized and treated to prevent a serious attack.                                     | TRUE | FALSE |
| 11. Strong emotions can sometimes make asthma worse.  | TRUE | FALSE |
| 12. There is nothing that you can do to reduce your asthma "triggers" around the house.   | TRUE | FALSE |
| 13. Asthma patients and their doctors and nurses need to work together to manage their disease.                                       | TRUE | FALSE |
| 14. Asthma symptoms frequently occur at night.  | TRUE | FALSE |
| 15. Other medical problems, such as indigestion and "stuffy" nose can make your asthma worse.   | TRUE | FALSE |

(Salyer & Davis, unpublished, 1997)



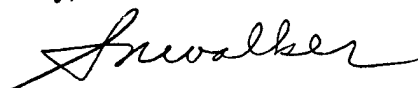
**APPENDIX G**

Dear Colleague:

Thank you for your request and payment to use the *Health-Promoting Lifestyle Profile II*. As indicated in the enclosed form, you have permission to copy and use the enclosed *Health-Promoting Lifestyle Profile II* for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in any way and the copyright/permission statement at the end is retained. The instrument may be reproduced in the appendix of a thesis, dissertation or research grant proposal without further permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

We thank you for your interest in the *Health-Promoting Lifestyle Profile II* and wish you much success with your efforts.

Sincerely,



Susan Noble Walker, EdD, RN, FAAN  
Professor and Chair,  
Department of Gerontological, Psychosocial and Community Health Nursing

Encl.: Health-Promoting Lifestyle Profile II  
Scoring instructions  
List of publications reporting use of the original Lifestyle Profile

## VITAE

Laura Anne Bass was born in Bradenton, Florida in 1962. She graduated from Palmetto High School in 1980. From there she went on to attend Manatee Community College where she earned an Associate of Science Degree in Nursing in 1984. During 1984 to 1992 she was employed at Manatee Memorial Hospital rising from a position as staff nurse to charge nurse. While continuing to work, she pursued her education and received a Bachelors of Science degree in 1989 from the University of South Florida.

In 1992 Ms. Bass joined the United States Air Force where from 1992 to 1996 she was stationed at Tinker Air Force Base in Oklahoma City, Oklahoma. While stationed at Tinker, she received a humanitarian award for her assistance during the Oklahoma City bombing and a meritorious service medal for outstanding performance. In 1995 she received an Air Force Institute of Technology assignment to further her education. She entered Virginia Commonwealth University in the fall of 1996 and plans to graduate in the spring of 1998. Her primary concentration during graduate studies was on adult health nursing, clinical nurse specialist focus. While attending Virginia Commonwealth University she was selected for membership in The Honor Society of Phi Kappa Phi. She is certified by the American Nurses Credentialing Center as a Medical-Surgical Nurse.

Upon graduation she will be assigned to Lackland Air Force Base, Texas where she will work in the Nurse Transition Program. This is a preceptor program designed to provide guidance to nurses entering both nursing and the Air Force.